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Algae

Nostoc

Occurance:

- Nostoc a member of Cyanobacteria.
- It is a Generelly Present in Fresh water Pools Ponds ditches etc.
- It occurs endophytically in association with algae to Form lichens

Lab technique

- Study thallus of Nostoc by Placing it on the Side.
- Spread it so that the Clonies may seprate from each other
- Stain with safranin, mount in glycerin and study the vegetative and Reproductive structure under the microscope

Structure of nonstoc

- The Colonies of nonstoc are Covered by muculgenous sheath
- Each filament has a thin mucialgenous sheath
- Cell has Prokaryotic Organisation

Reproduction

Akinetes

These are reproductive cells which develop b/w two heterocytes.

akinetes under favourable condition liberated by decay of the parent colony.

These Germination on a suitable substratum it's from a new nonstoc thallus.

Classification of nonstoc

Sub division: Algae

Simple thallus Present

Class :- Cyanophyceae

Reserve food :Cyanophyceae Starch

Order: Nonstocaceae

Few large cells heterocytes Present.

Genus: Nonstoc

Single entire Colony heterocyst

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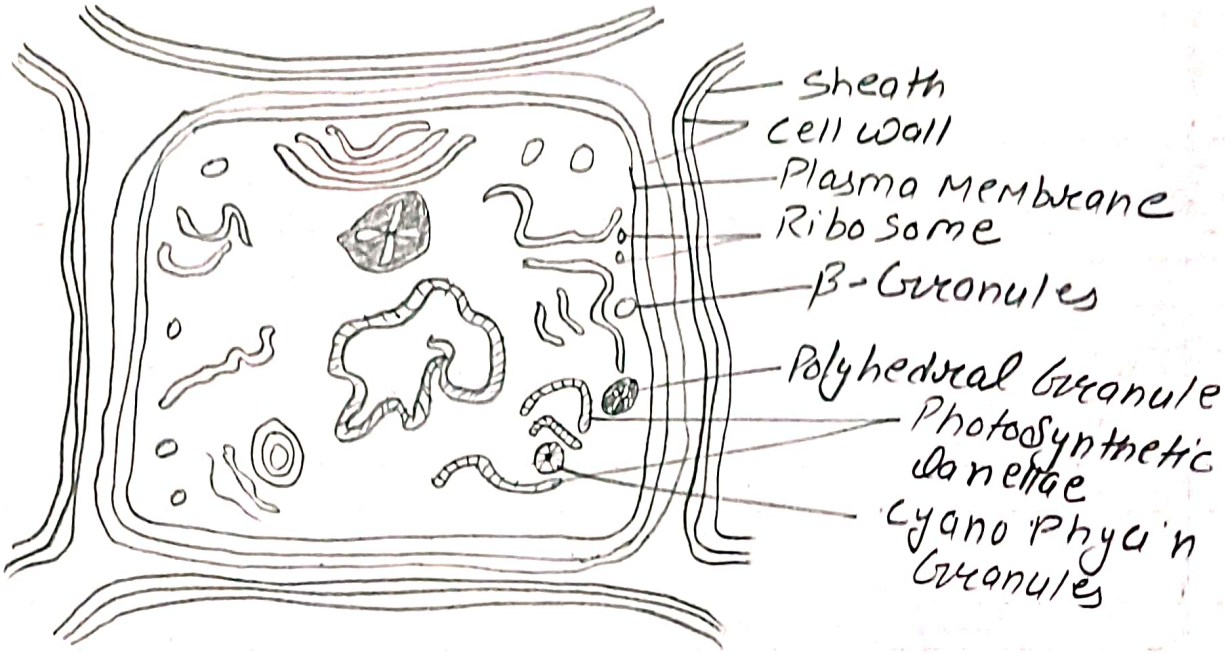

Nonstoc - Cell Structure

Date
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Volvox: (Rolling ball)

Occurance

Chlorophycae is the largest Group of Algae most of its members almost 90% occur in the fresh water white Rest are main in Nature.
These are Griven in Colour due to the dominance of Chlorophyll, hence these are Called a Griven Algae

lab Technique

Stain few Colonies in Safranin mount in the glycerin And Study the Structure Under microscope
Colonies of Volvox are oval or Spherical hollow from inside Thallus is Multicellular, motile and Coenobia

Reproductive

Asexual and Sexual Reproductive is Present in Volvox

Asexual Reproduction

Asexual Reproduction in volvox takes Place by forming daught Colonies
The daughter Coenobia are Released from the Present Coenobid by gelatinisation of the Present Coenobia

Sexual Reproduction

Coenobia of Volvox may be monocieous i.e antherida Oogonia and Zygote after Fertilization may be

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Sun in the same Coenobia.
After Fertilization is found this Secrets a thick
around itself and Forms the Zygote.

Classification of Volvox

Sub-division - Algae
Vascular System Absent

Class - Chlorophyceae
Starch is Present as Reserve Food

Order - Volvocales
Multicellular motile Colony

Family - Volvocaceae
motile Coenobian Present.

Genus - Volvox
Spherical motile Coenobia

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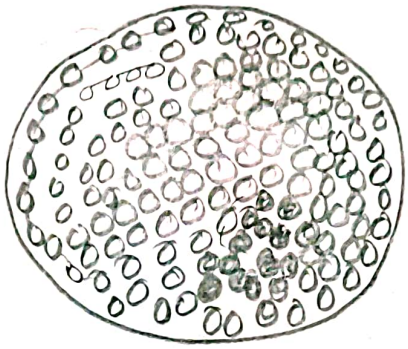
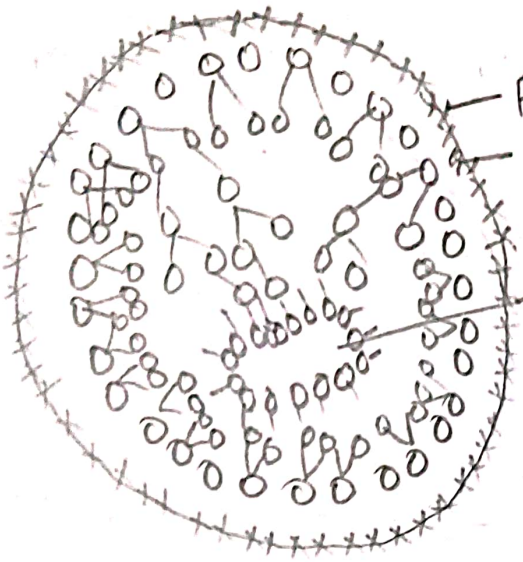
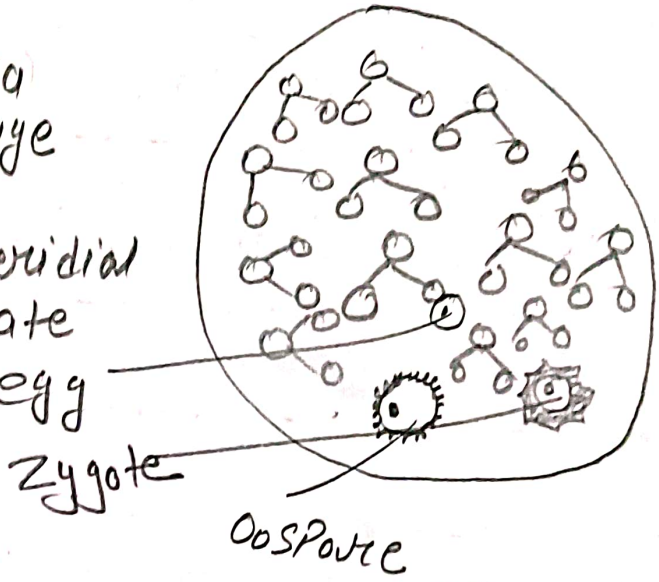


Volvox Showing Daughter Colony



Volvox Coenobea with Antherida



Volvox Coenobia with egg OoSPoure and Zygote

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Chara

Comments

→ Foul, Musty - Garlic like Odour. muskgrass its name

→ Grey Green branched multi-Cellular algae that is often Confused with Submerged Flowing Plants.

→ Height Can range from Just Under and Inch is about 6.5 Feet.

→ Has no Flower.

→ Do not extend Above the water Surface.

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Reproductive organs of chara

Characteristics :-

→ The mode of Reproduction in chara is oogamous

→ The male is Sex organ is Spherical and Yellow to Red is Colour, called Glouble

→ The Female Sex organ is oval and Greenish in Colour and Called the nucule or Oganium

→ chara Reproduce vegetatively and Sexually.

→ The Sex organs are a multicellulare and Jacketted Globule or anthiridium (male) and mucule is archagonium (Female)

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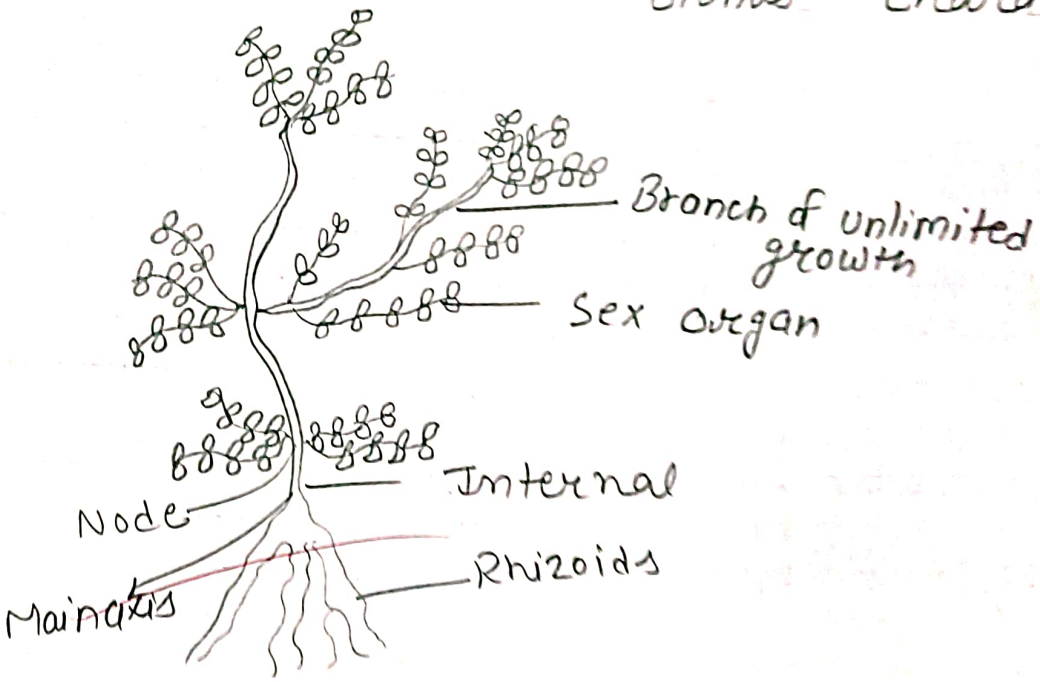
Chara

Classification of Chara
Division - Chlorophyta
Class - Chlorophyceae
Order - Charales
Family - Characeae
Genus - Chara



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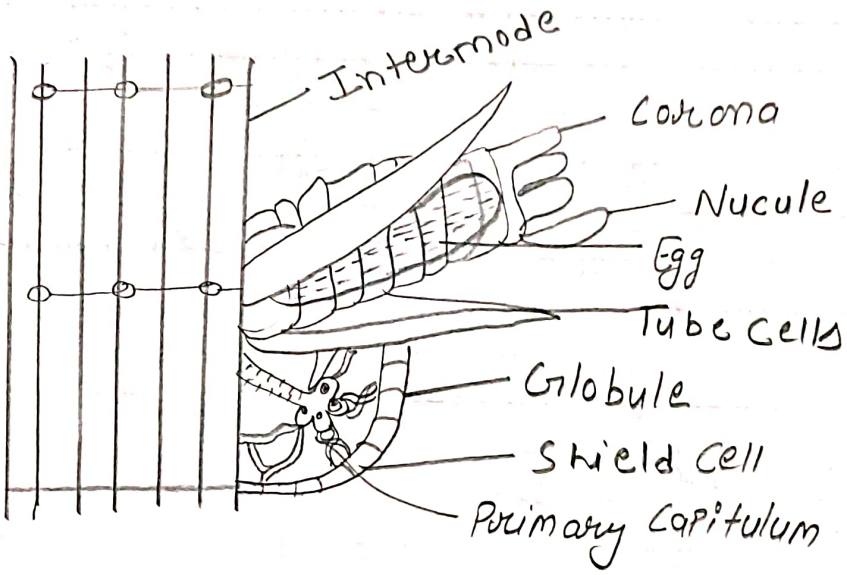
Reproductive Organs of Chara



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Vaucheria

Comments.

→ Plant body is tubular or cylindrical and irregular branched

→ Terrestial species are attached in the substratum

→ Wall of the Filament is thin elastic and Consist of an outer layers of Pectose and inners layer of Cellulose

→ Pyrenoids are Absent

→ large no. of oil Droplets make the Reservic. Food material of the thallus

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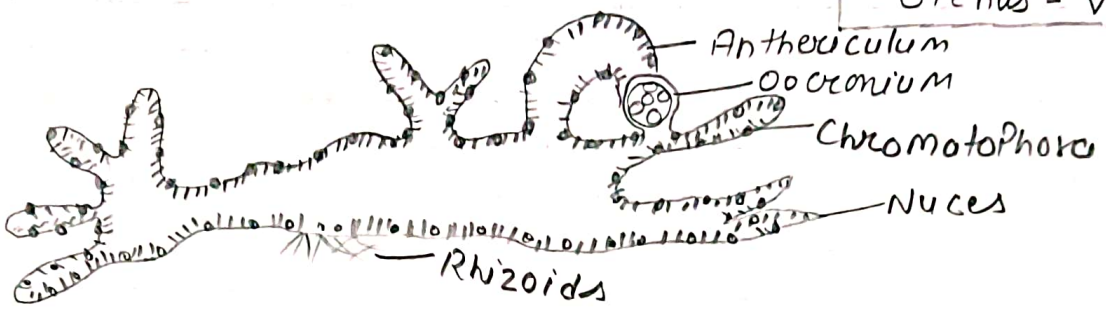
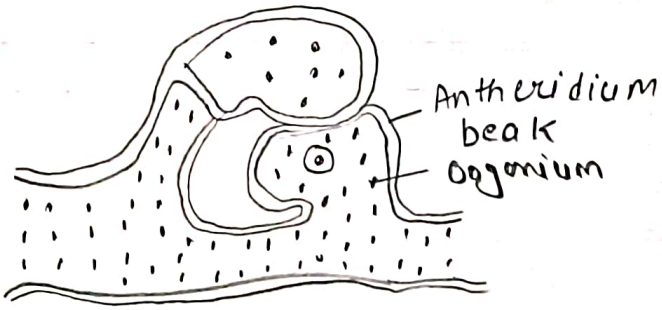
Vaucheria

Classification of Vaucheria
Division - Xanthophyta
Class - Xanthophyceae
order - Vaucheriales
Family - Vaucheriaceae
Genus - Vaucheria





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Ecto Carpus

Comments

→ The Plant is made up of uniseriate filament and is hetero trichous

→ The size of the thallus is variable from 1mm-10mm

→ It has a highly branched erect from and a Prostate system or based rhizoidal system

→ The lateral branches on the main stem arise below the septa

→ Cell wall is Double, the outer being gelatinous and inner Cellulosic

→ Fuosam Granules occur as Reserve Food material

→ Unicellular sporangia Gives Rise to haploid zoospore by meotic division and Plourilocular sporangia Forms Diploid Zoospores

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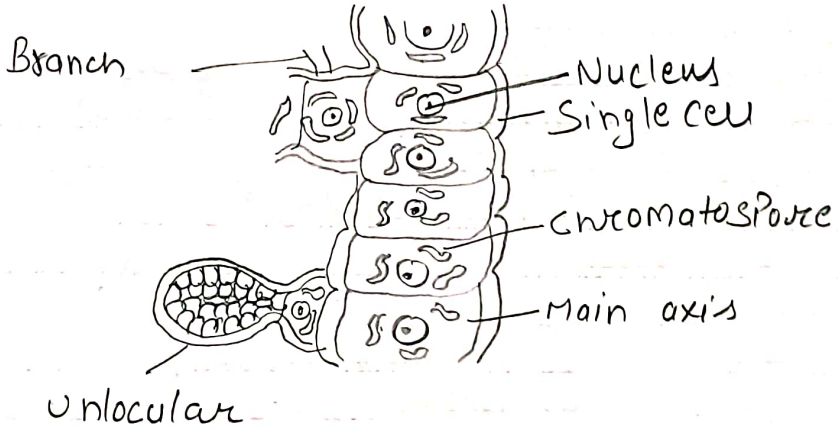
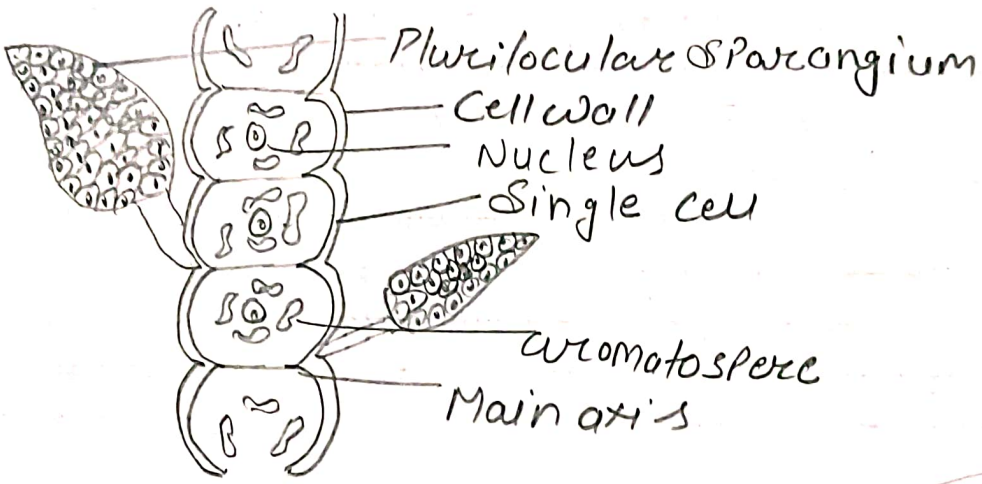
Ectocarpus

Classification of Ectocarpus
Division - Chromista
Class - Phalo Phyceae
order - Ectocarpus
Family - Ectocarpeae
Genus - Ectocarpus



Ectocarpus: showing unilocular sporangia



Ectocarpus :- Showing Plurilocular Sporangia

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Polysiphonia

Comments

→ It occures on the Subliteral as well as in tidal Marks Marshes brakish and tidal Pools.

→ Plant body is bush like and Red or Dark blue Coloured

→ Upright Filament are laterally or dichotomously Branched

→ Erech System Consist of the main axis having long and short branches

→ Plant body is made up of many Siphones

→ Each long branch and main axis Consist of a Central Siphon made up of many elongated Cells arranged one upon other.

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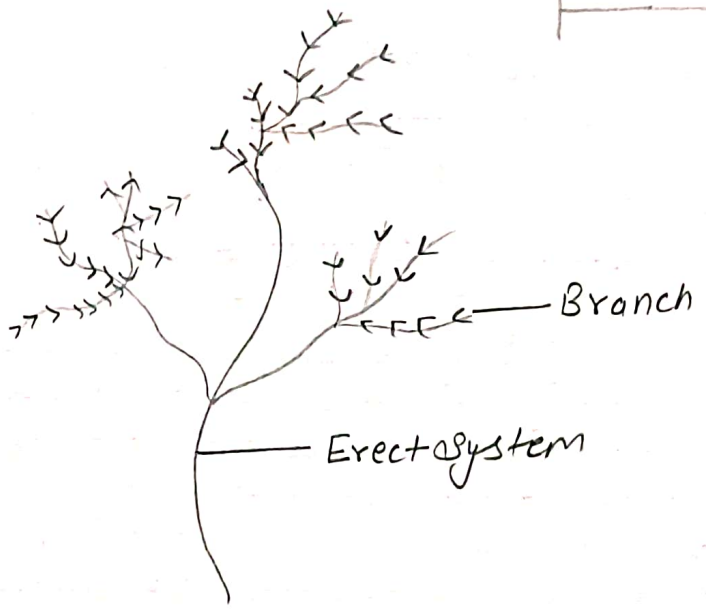
Poliysi Phonia

Classification of Polysiphonia
Division - Podo Phyto
Class - Rodomeloceae
Order - Equisetales
Family - Rhodomelcae
Genus - Polysiphonia



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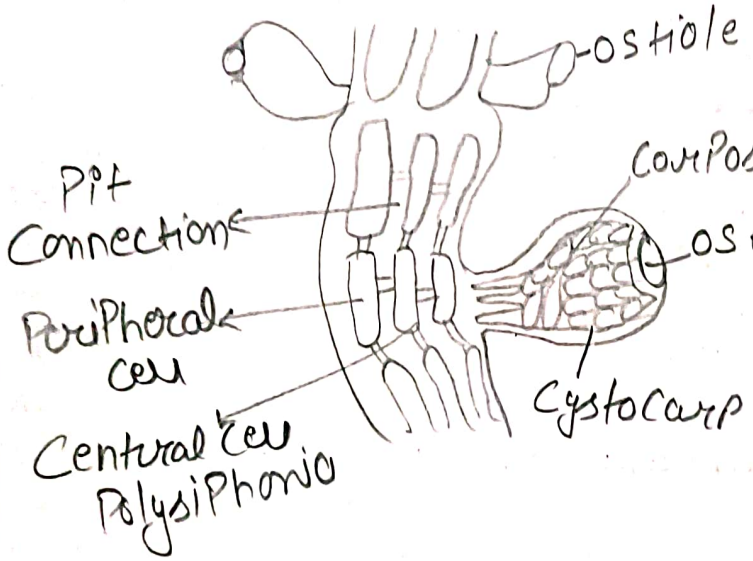
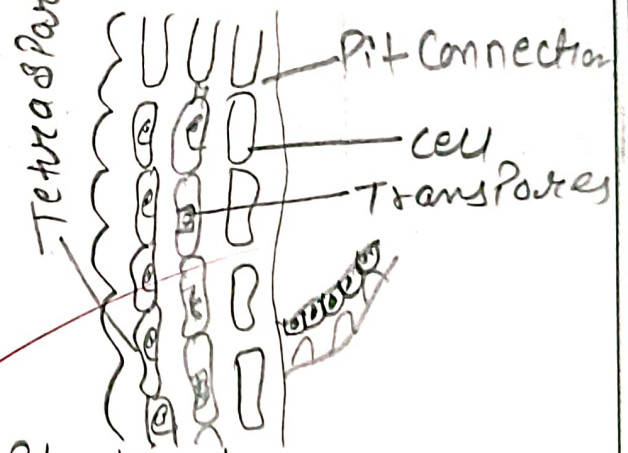


Polysiphonia : Female branch with Cystocarp



Polysiphonia : Tetrasporophyte Part of Filament Enlarged

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Rhizopus

Charaterstics :-

→ They have branching body known as Mycelia

→ The majority of Rhizopous are aSaProbic In nature decomPoser

→ They mainly Feed on dead organic matter or organism

→ They ReProduce by aSPore Formation

→ The black SPorogonia at the tiPs of the aSPorogonia Phores are rounded and Produce numerous menmotile multinucleate aSPore For aSexual ReProduction.

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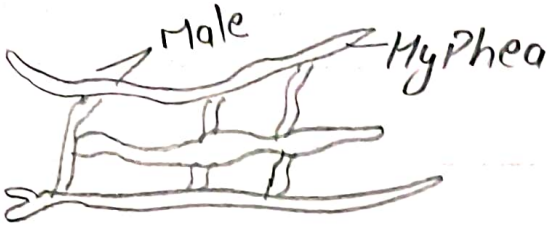
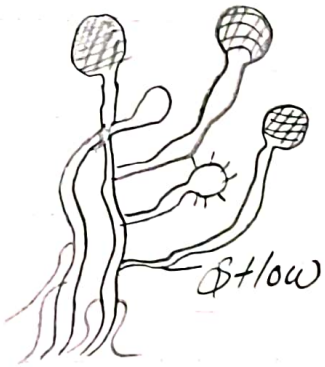
Rhizopus

Classifi. of Rhizopus
Division - Hycote
Class - Zygomycetes
Order - Mycorales
Family - Muscorozae
Genus - Rhizopus





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Peziza

Characteristic

→ A Fruting body of species of Peziza is mostly cup or disc- shaped called an apothecium

→ The Apothecia are mostly sessile but sometimes stalked minute to very large (0.5 - 10.0 cm or more than diameter)

→ The species Peziza vesicular is considered poisonous

→ The Fruiting body of Peziza is known as ascocarp

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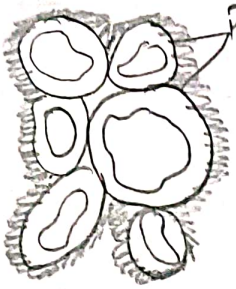
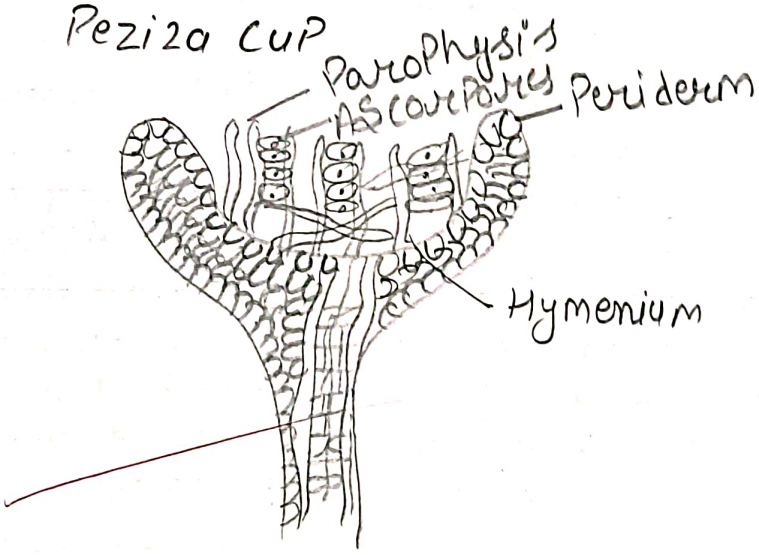
Peziza

Classification of Peziza
Division - Eumycota
Class - Ascomycetes
order - Pezizalus
Family - Peziculus
Genus - Peziza



Peziza Cup



L.S Peziza Cup

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Agaricus

Comments :-

→ It is Commonly known as mushroom

→ It is saprophytic, double Fungus occuring Commonly in Rainy season as humus soil and other organic substances

→ Vegetative mycellium Grows which in the soil

→ Primary mycellium is septate, haploid, short-lived and Each Cell Contain oil Globule, vaccules and one nucleus.

→ Hyphae of Secondary mycellium are long branched and Remain twisted to form a thick Hyphae Card Called Pasidio Carp

→ Pilus is an Umbercella shaped structure, the underside of which is linned by many Gills

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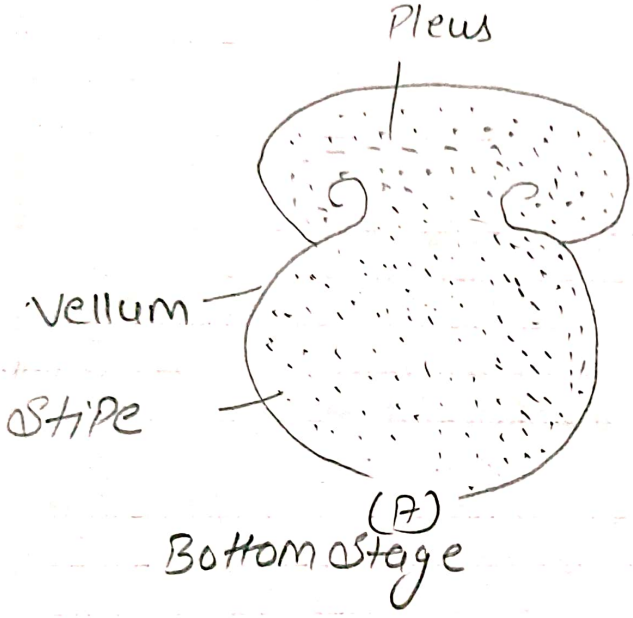
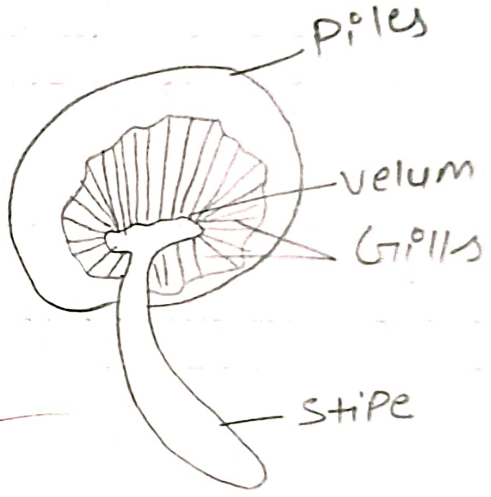
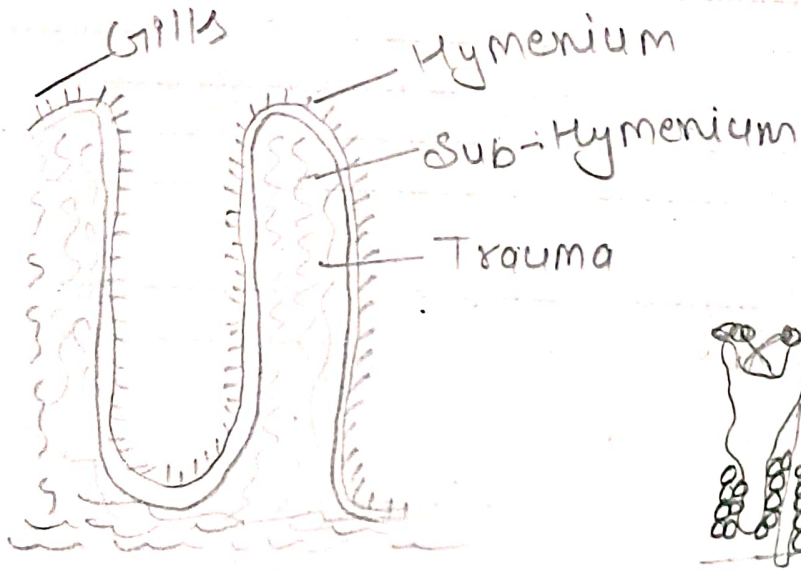
Classification of Agaricus
Division - Basidiomycota
Class - Hemobasidiomycae
Order - Agaricus
Family - Agaricaceae
Genus - Agaricus



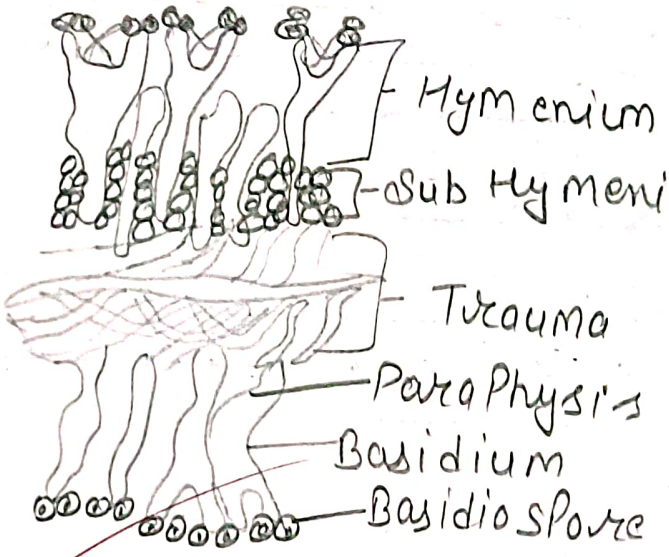
(A)
Bottom Stage



(B)
Mature Basidiocarp



Agaricus :- L.S Basidiocarp



Agaricus: Hymenium Region

Lichens

Crustose lichens

→ Crustose lichens are Flate, thin and without any distinct lobes

→ They are usually Found closely attached to Stones Rocks barks and the trunk of trees.

→ They basic Structure of Crustose lichen Consists of Crustose lichen Consists of a Cortex layer an algae layer, and a medulla.

→ They are usually Found closely attached to Stones Rocks, barks and the trunk of trees.

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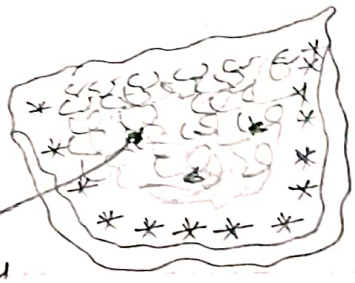
Crustose lichens

Classification of Crustose Lichen
Division - Mycota
Class - Lichen
Order - Parameliase
Family - Usneae
Genus - Usneal Liche



Crustose Lichen :- Rhizocarpon

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Foliose Lichen

Characteristics

→ Foliose lichens are large and leafy Reaching diameter of several Fleek in some species and are usually attached to the substrate by their large flats like thalli to the centre

→ These lichens have a distinct top and bottom side and can be leafy, Fleat or bumpy

→ The Photobiont layer lies just below the upper cortex

→ Where present, the lower cortex is usually dark but occassionally white.

→ The term "Foliose" derives from the latin word meaning leafy

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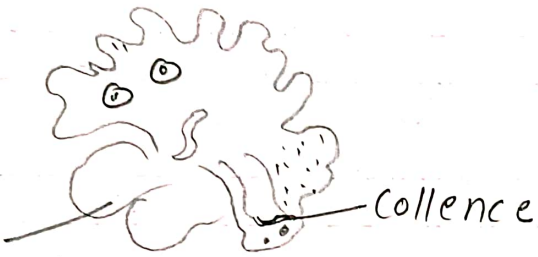
Faliose

Classification of Faliose
Division - Mycota
Class - Lichens
order - Paramelials
Family - Usnaceae
Genus - Usnea / Faliose



Faliose lichen

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Fruticose Lichen

Comments :-

→ Fruticose lichens exhibit a three-dimensional structure.

→ A Fruticose lichen is a form of lichen fungi that has characteristics by coral-like shrubby or bushy growth structure.

→ It is formed from a symbiotic.

→ Other Fruticose lichens have flat branches that tangle up with each other.

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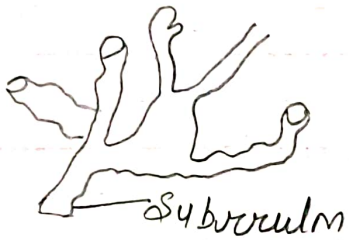
Fruticose

Classification of Fruticose

Division - Mycota
Class - Lichens
order - Paromelids
Family - Unraceae
Genus - Fruticose

Apthecium



Subbrullm

Faloces

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Bryophytes

Marchantia

Characterstics

→ The Common habitat is moist and shady Places

→ The Plant body is thalloid

→ The Thallus is dersiventral, Flat and dichotomously branched

→ The Gametophyte is the dominant Phase of Plant life

→ Marchantia is characterized by repeated branching into two Parts

→ The thallus has multiple layers of cells.

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Marchantia : Scales and Rhizoids

Characteristics

→ The Common habitat is moist and Shady Places

→ The Plant body is thalloids.

→ The dorsal Surface Contains diamond - Shaped Markings which has Central Pore in the middle for gaseous exchange

→ The ventral Surface retains Scales and Rhizoids

→ The Reproductive bodies are Present on the Dorsal Surface

→ Rhizoids are not Present along the Central line on the ventral Surface.

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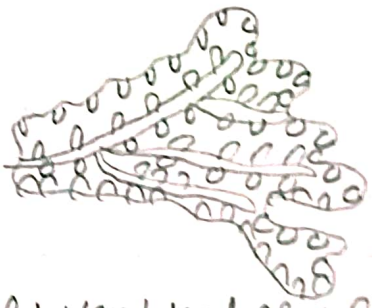
Marchantia

Classification of Marchantia
Division - Hepatophyta
Class - Marchantiales
Order - Marchantial
Family - Marchantia
Genus - Marchantia

Thallus of Marchant
(A) Dorsal Surface



(B) Ventral Surface

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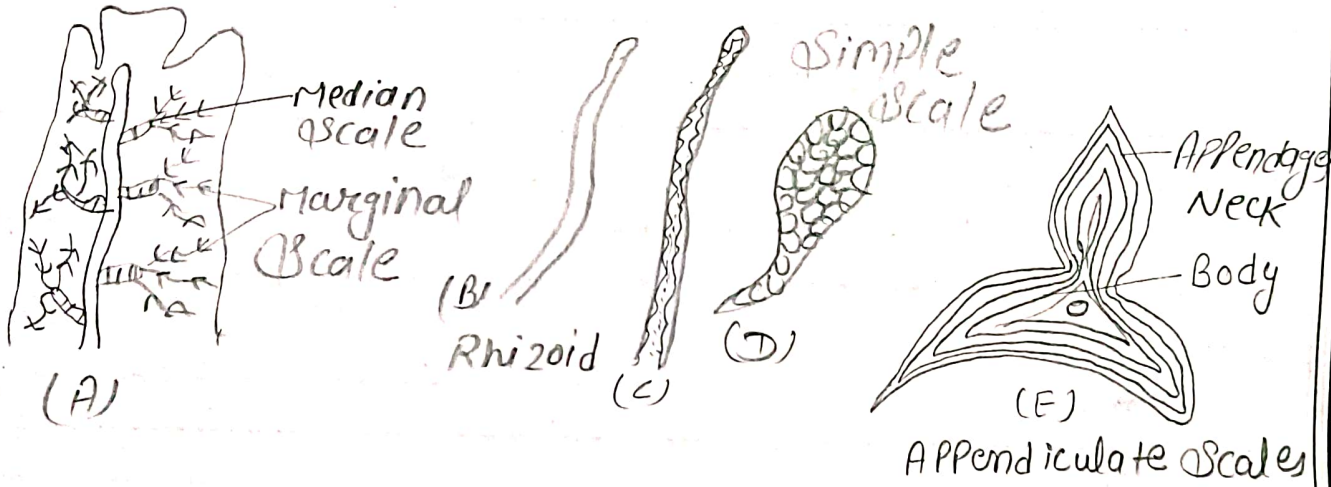
Marchantia : Scales and Rhizoids



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Anthoceres

Comments:-

→ The Plant body of Anthoceres is a Prostrate Small dersiventral thallus.

→ Ventral Surface has unbranched, Smooth walled rhizoids

→ VTs thallus of Anthoceres is thick in the middle Region And thin at margin

→ Thallus is bound on upper and lower Surface by single layer epidermis.

→ The Sexual Reproductive organs are developed on Dorsal Surface of the thallus in a row breath the Growing Plant.

→ Male Reproductive organs are Antheredia.

→ Female Reproductive organ are Archgonium.

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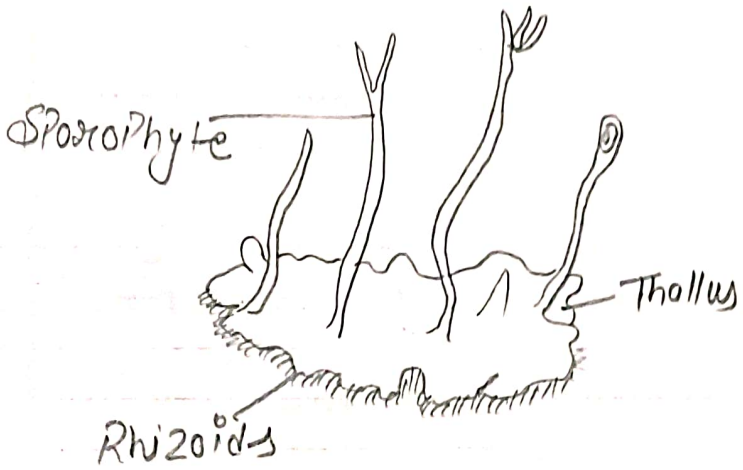
Anthoceres

Classification of Anthoce
Division - Bryophyte
Class - Anthocartopic
order - Anthocartales
Family - Anthocerotaceae
Genus - Anthoceres



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Anthoceros: L.S of Sporophyte

Characteristics

→ The Sporophytic body of Anthoceros embeded in the Gametophytic body

→ It is divided into three distinct Regions The Foot is a bulbous Parenchymatous Stru. that is embeded in the Gametophyte

→ It helps in observing water and Nutreints From the Game to Phyte.

→ The Sporophyte Produce the Spores in the Capsule.

→ The Spores on Germination Produce the Gametophyte

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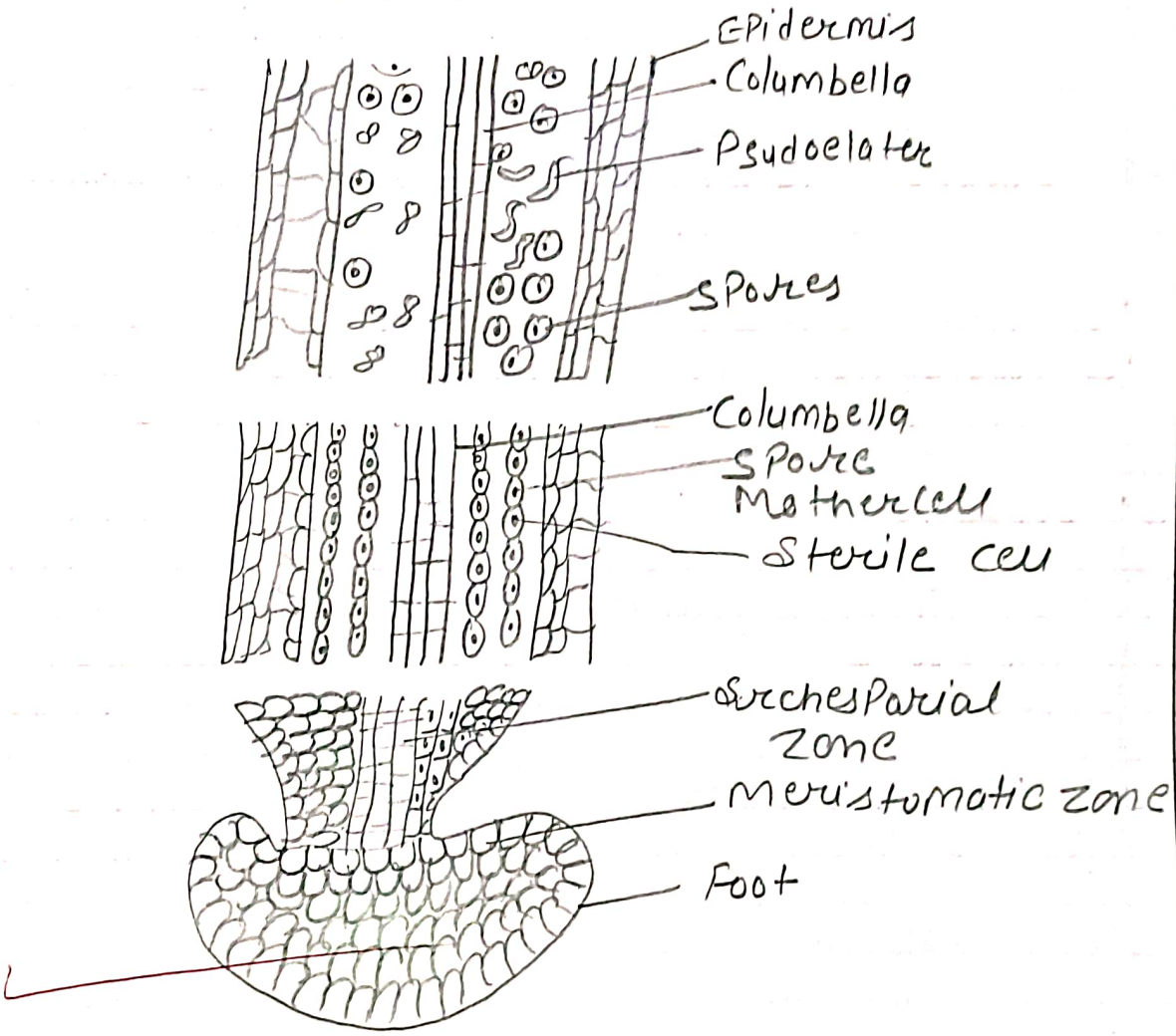
Anthoceres : L.S of Saprophyte



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Funeria

Comments :-

→ Plant body is Divided into Rhizoids, Stem and leaves

→ Rhizoids in Funeria are branched, delicate and Multicellular. having Oblique Septa.

→ leaves are Sessile, ovate, with a distinct midrib.

→ Sexual Reproductive occurs.

→ In Funeria the Plants are Monoceious

→ The Size of Female branch is Smaller than the male branch.

→ Archegonia are Sourrended by Group of leaves.

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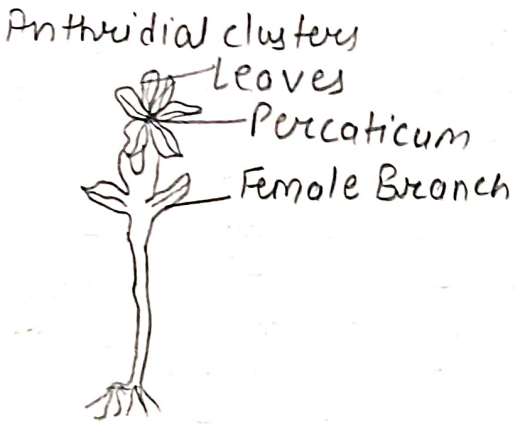
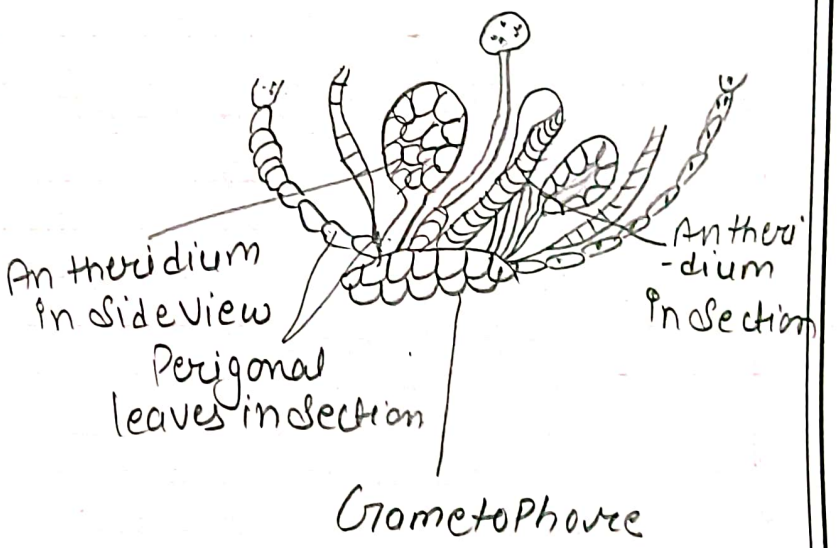
Funeria

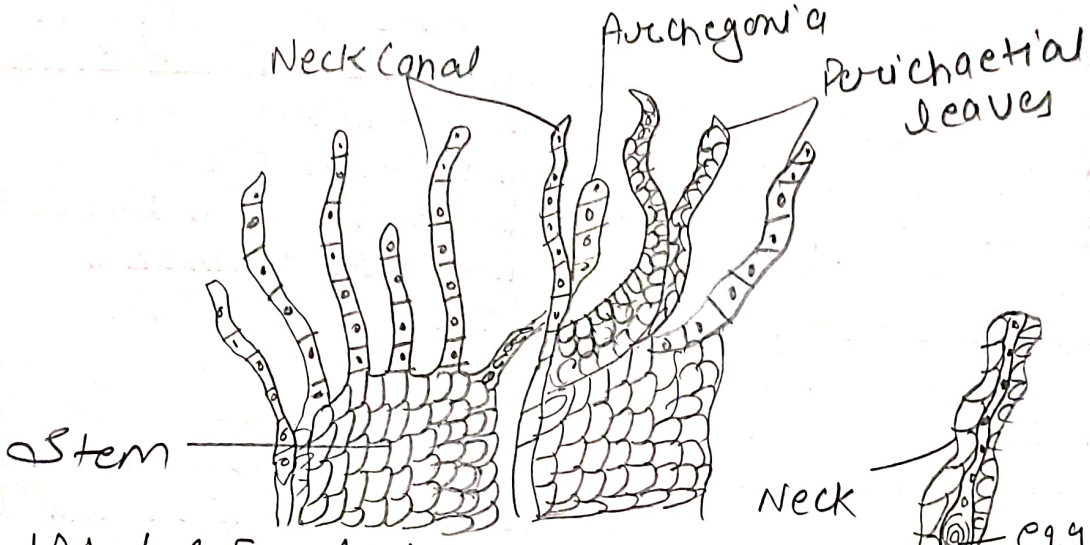
Classification of Funeria
Division → Bryophyta
Class - Bryopsida
SubClass - Bryidae
Order - Funariales
Family - Funariaceae
Genus - Funeria



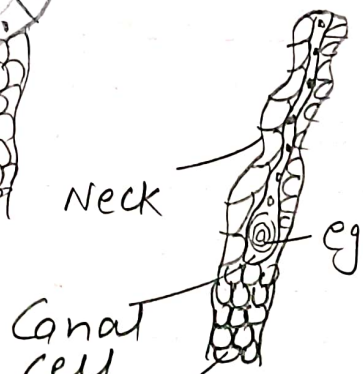
(A) Funaria Male Branch



(B) L.s of Male branch



(A) L.S Female branch



(B) Mature Archegonia

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Q-1 Excercise based on cell Structure and types. (Labelled Diagram Comment) (Mitochondria)

Q-2 Make a Suitable acetocarmin Preparation of the Given Material. Draw a well diagram of any Stage of Nuclear Division. (Identify Stage) (Onion root tip)

Q-3 Make a Suitable Stained Preparation of the Given Mater A Draw a labelled diagram and identify Reason (Algae ectocarpus Reproductive Organ)

Q-4 Make a Suitable Stained Preparation of the Given Material B. Draw a labelled diagram and identify Giving Reason (Fungi) Peziza

Q-5 Make a Suitable Stained Preparation of the Given Materi c. (Vegetative / Reproductive) Part- Draw a labelled Diagram and identify Giving Reason (Bryophyte) Anthoceros

Q-6 Comment upon Spots (any Four) (i) Meta Phase (ii) Lamphrus Chromosome (iii) Polysiphonia (iv) Fruticose lichen

Q-7 Viva Voice

Q-8 Record

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(Mitochondria)

Ans-1 Mitochondria

Comments

→ Mitochondria is Power house of cell.

→ It is Double membrane bound, Rod-shaped or spherical structure

→ Their outer membrane is smoot.

→ The inner membrane is Folded inwards to Form Cristae.

→ It is rich in enzymes For Respiration.

→ It is spherical in structure

→ It is covered by a single membrane.

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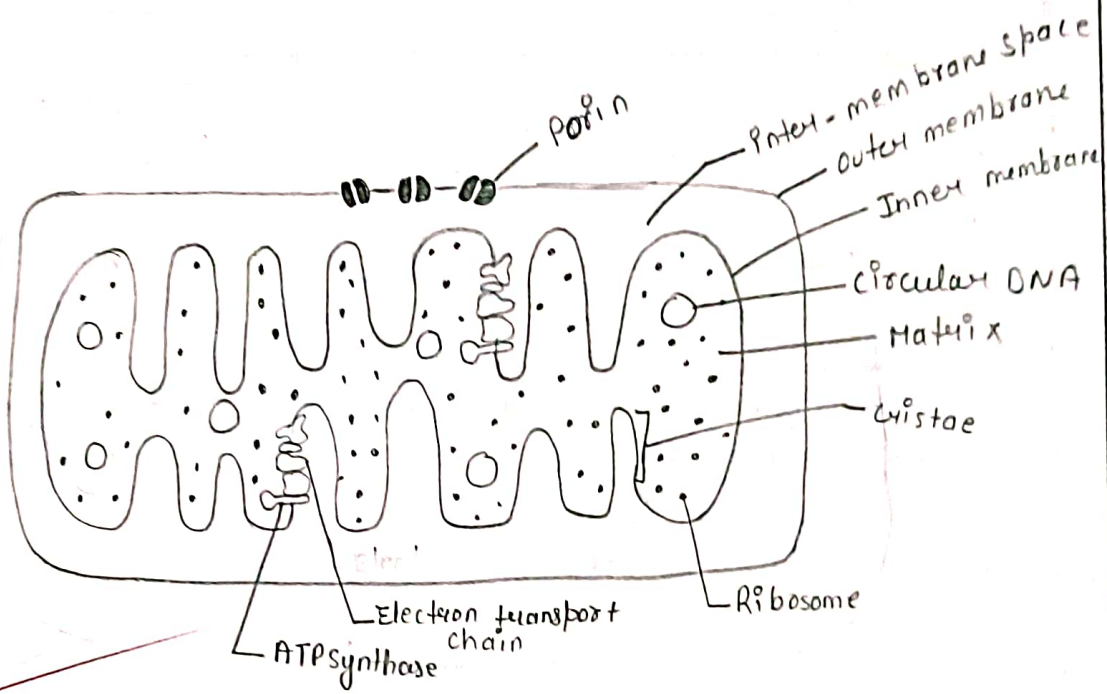

—: DIG - Mitochondria :-

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Ans-2 Onion Root tip

Aim:- To study any one stage of nuclear division (Onion Root tip)

Telophase:-

Comments:-

→ Chromosome are seen at both Poles of the spindle Fibres in the Form of thin thread-like structure

→ Chromosomes elongate and Form a network of Chromat

→ Spindles fibres disappear.

→ Two Nuclei are Formed at both Poles.

→ This Division is called Karyokinesis

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Ans-3 Algae - Ectocarpus
Reproductive organ

Reproduction:

→ In the life of cycle of Ectocarpus two types of sporangia are found

(i) Unilocular Sporangia :- These are found on the vegetat branches. They produce Numerous Zoospores. These Zoospores on Germination given rise to new Ectocarpus Plants.

(ii) Plurilocular sporangia :- These are found on specialized branches. They produce Gametes. The Gametes Fuse to Form Zygotes. The Zygotes germinate to Form new Ectocarpus Plants.

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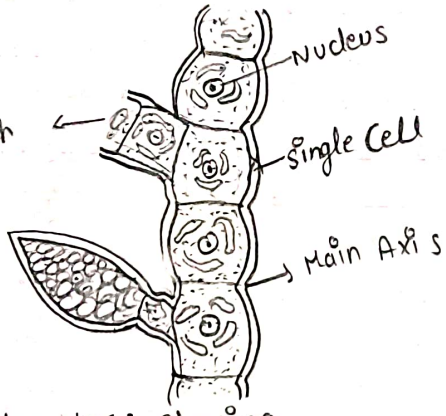
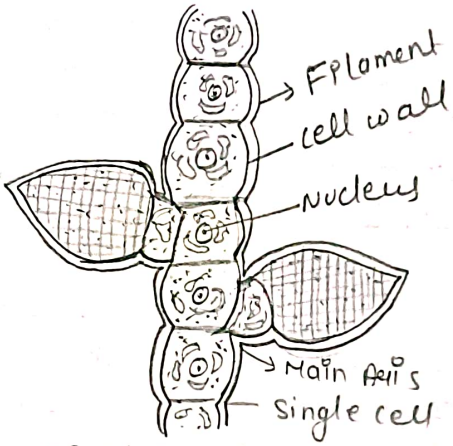


:DIG:- Ectocarpus : showing unilocular sporangia :-



-: DIG :- Ectocarpus : showing Plurilocular sporangia :-

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Ans-4 Fungi - Peziza

General Structure:-

→ Peziza is a cup - shaped Fungus The cup like structure is called apothecium

→ The apothecium is multicellular and multinucleated

→ The Fungal hyphae Penetrate the Substrate and form a Complex Network

Apothecium:-

→ The Apothecium is small, Fleshy and cup-shaped

→ It is about 1-2 cm in diameter and is Reddish brown in Color

→ Ascospores are oblong and uninucleate.

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Ans-5 Bryophyta - Anthoceros - Reproductive Part

Reproduction:-

Anthoceros Reproduces through both asexual and Sexual organs

Sexual Reproduction:-

→ Sexual Reproductive organs Cantheridia and archegonia) are Present on the Dorsal Surface of the thallus behind the apical Notch

→ Anthoceros Can be either monoecious or dioecious

Gametophyte:-

→ The Gametophyte is a Flate, Green and thaloid Structure

→ The Gametophyte bears an Apical notch

Sporophyte:-

→ Spores Germinate to From new gametophytes

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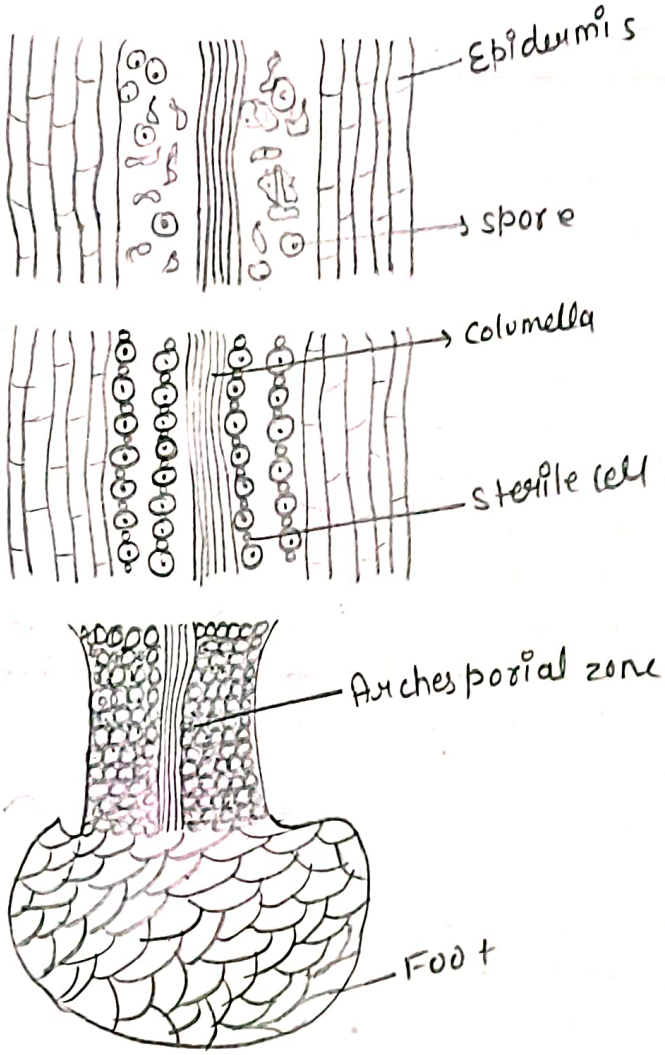

:- DIG :- Anthoceros : L.S. of sporophyte :-

Ans-6 Spots - (i) MetaPhase

Identification :- The Given Spot is MetaPhase.

Comments :-

→ Nuclear membrane and Nucleolus are Completly Absent

→ Chromosomes are Short and thick.

→ Chromosomes are arranget on the equitorial Plate.

→ Each Chromosome has two Chromatids a Centromere, and Kinetochore.

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(ii) Lambrush Chromosome

Identification:- This Given Spot is lambrush Chromosome

Diagram —

Comments :-

→ These are Found in the Oocytes of Vertebrate Animals

→ These are giant Chromosomes and due to their multiple loops, they Resembles a brush in Shape

→ 1-9 loops are found in the Chromosomes.

→ Composed of DNA, RNA and Protein and is Sourrended by a Matrix

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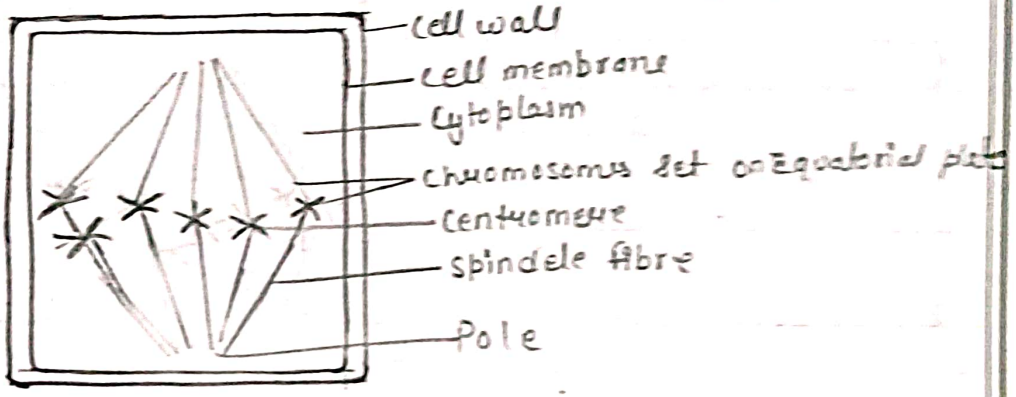
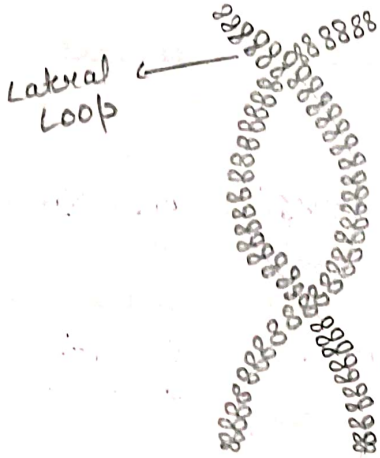


→ DIG:- Metaphase :-



-: DIG:- Lambrush Chromosome :-

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(iii) Polysiphonia

Identification :- This given spot is Polysiphonia

Diagram —

Comments :-

→ The Cytoplasm is found on the periphery of the cell and the Nucleus is present in only one cell

→ Several Chromatospores are present in the Cytoplasm on which Pigment are present

→ Floridian starch is found in the cells when ~~food~~ is stored.

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(IV) Fruticose lichens

Identification:- These given spot is fruticose lichens

Diagram —

Comments:-

→ Fruticose lichens are cylindrical ribbon-like or flat

→ They are highly branched and shrub like

→ They hang or grow upright from branches of trees/plants

→ They are attached to the base by a disc-shaped structure.

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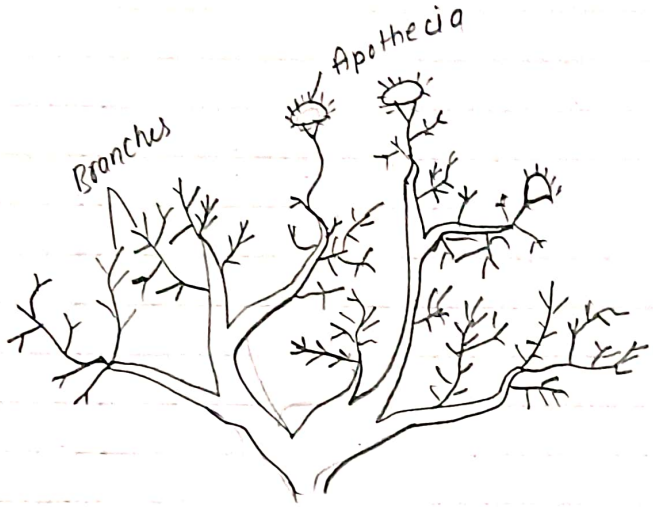

-: DIG :- Fruticose Lichen : USNEA :-

18/12/24