BOT — (3)
(103)

R. K. Vigyan P.G. Mahavidhyalaya

BEHIND KALWAR POLICE STATION, KALWAR, JAIPUR (RAJ.)

PRACTICAL FILE

Botany

INDEX

S. No.	Name of Experiment	Page No.	Date of Experiment	Date of Submission	Remarks
1	Study of different layers of Anther.				
2	Different types of ovule study.				
3	Development of monocot embryo.				
4	Development of dicot embryo.				
5	Adaption in Plants :-				
1	Boerrhacia Stem				
2	T.S. of Boerrhacia Stem.				
3	T.S. of Leptadaenia stem.				
4	Convection System				
5	T.S. of Dracaenia stem.				
6	Meristematic tissues.				
7	T.S. of cucurbita stem.				
8	T.S. of Zeamays Stem.				
9	Vascular bundles.				
10	T.S. of nerium leaf				
11	T.S. of " " .				

Page

① Study of different layer of Anther.

Usefull equipement :- Unmatured anther's, Static slide, microscope, needle, brush, cover slip, petridish.

Unmature Anther slide study → Unmature anther's. Slide Transverse section cutting following structures are as :-

① Epidermis :- This is the outermost layer of anther. This is the Unicellular and outermost defence cover.

② Endothecium :→ This is found below the epidermis and Uni-cellular. Mature anther endothecium cells have different changes. Its cells are thick but inner cells are α - cellulose.

③ Middle - layer :→ The lower surface of endothecium parenchyma is made up of middle layer. this is unicellular or multicellular. The food is absorbed by this. In mature anther middle layer is absent.

④ Tapetum :→ This is the innermost layer which is found on nutrition level. This is covered by anther filament. cells of tapetum in begining is the multiples but after some time it becomes multi-cellular. Cells of Tapetum Secrets enzyme and hormones.

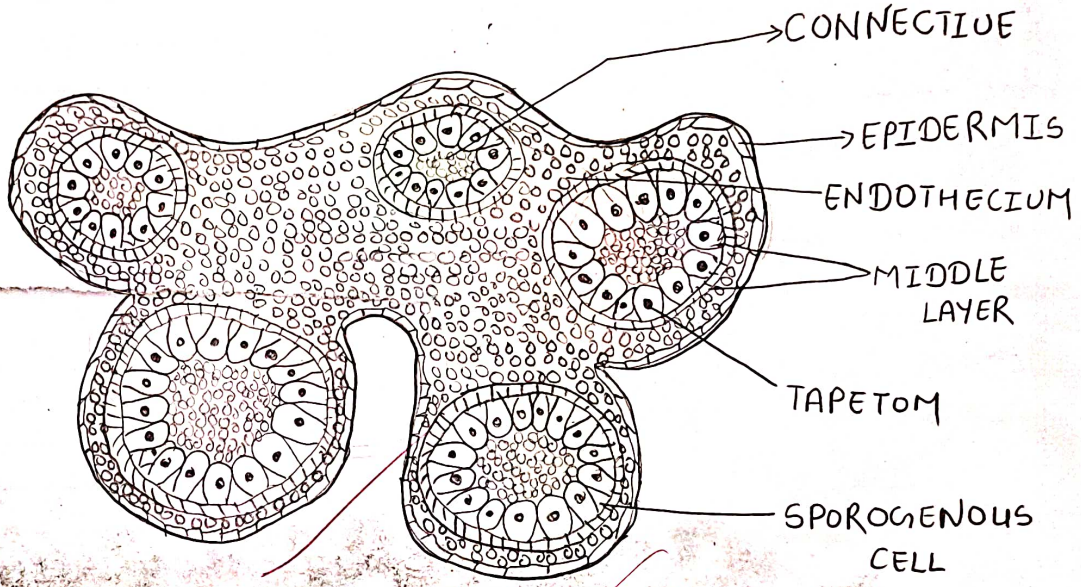


FIG = T.S of ANTHER

Date
Page

Study of different type of ovum.

Necessary Equipment :→ Needle, brush, Blade, Slide, cover slip, microscope etc.

(1) Orthotropic Ovule :→ In this structure the ovum gate, ovum body, and ovum cells are present on straight lines. This is the type of ovum. This ovum is covered by two covers. This family is polygonaceae, piperaceae etc. about 20 families present.
Ex. → Polygonum.

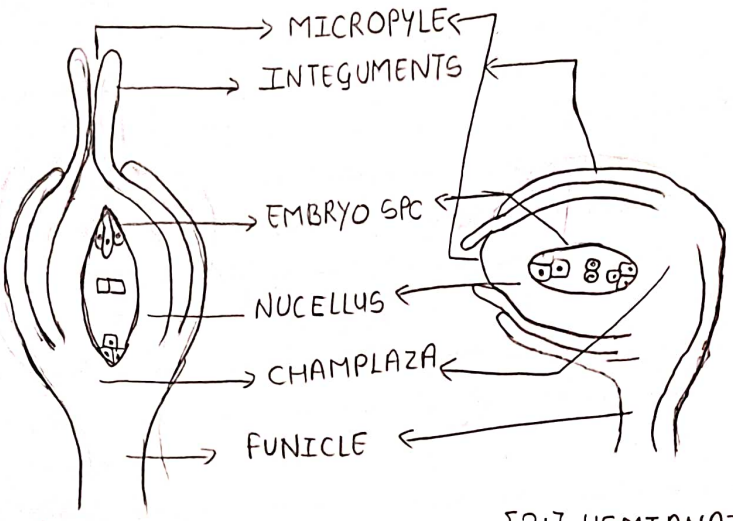
(2) Hemanatropus ovule :- In this type of structure the ovule is by the right angle making. and the ovule in this the 90°c. This is the present in 13 species. Ex.→ Ranunculus.

(3) Anatropous ovule :→ In this the one part is grown more. on this increases the ovum rotate on 180°. In this are comes close to each other.
Ex. → Helianthes.

(4) Campylotropus ovule :→ In this type of ovum the ovule are circular. This is the character of 5 family.
Ex.→ Chenopodium.

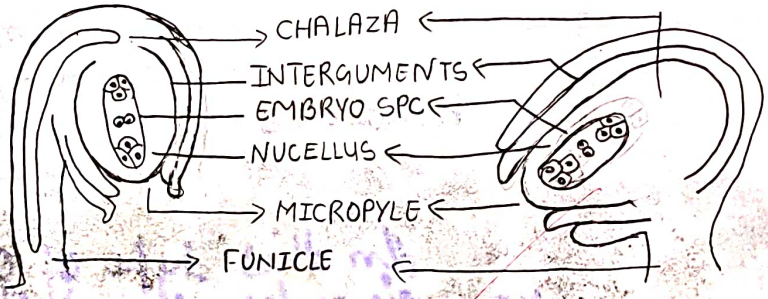
Page No. :.....

Date :.....



(1.) ORTHOTROPOUS OVULE

[2.] HEMIANATROPOUS OVULE



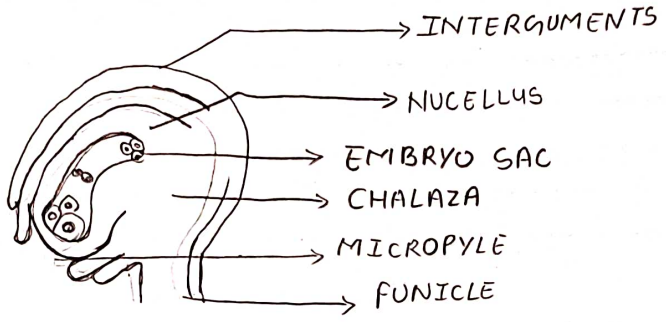
(3.) ANATROPOUS OVULE

[4.] CAMPYLOTROPOUS OVULE

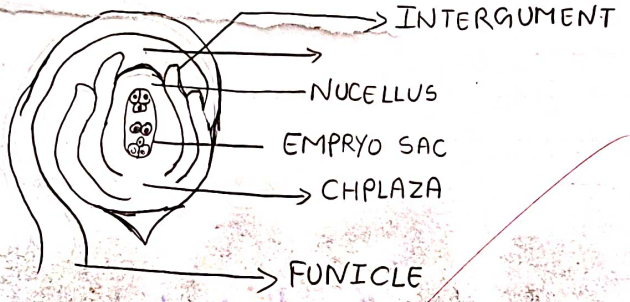
Teacher Signature .....

(5) Amphitropous ovule :→ In this type of ovule the curvature is more. by the curvature the embryo is make the horse shoe. In this the ovule gate are does not found in a straight line. This ovule is the character of 4 families.
Ex.→ Ycotonus.

(6) Circinatropous ovule → The growth of funicle is unlimited. the growth of funicle is not stopped. and the ovule rotate on 360°. by this the ovum gate is in upward direction. This ovum is found in only two family (Family- Cactaceae and Jabinaceae).
Example → Cactus.



[5.] AMPHITROPOUS OVULE



[6.] CIRCINOTROPOUS OVULE

Teacher Signature .....

Development of Monocot Embryo.

Object:→ Study of foetal growth in one seed Container

Equipements:-
Needle, Brush, Blade, Slide, coverslip, microscope etc.

Method:→ In a seed container presence of foetal growth. In this firstly transerse section. by this the two cells are formed. the above cell embryo and lower cells are called basal cells.

→ On the basal cell there is no divison. In this the increasement in size and makes Haustorial cell. only in embryo cell have trasverse section. In this the above cell is called the seed container cell and lower cell is called Embryonal axis cell.

→ In Embryonal axis have transeverse division. In this two cells are formed. In which one is plumule initial cell and other is Radial initial cell.

→ In ovum cell by fastly division a apical seed coat is formed. which push the embryo in posterior. In a seed coat the posterior presence of prankur and on the head portion of seed coat.

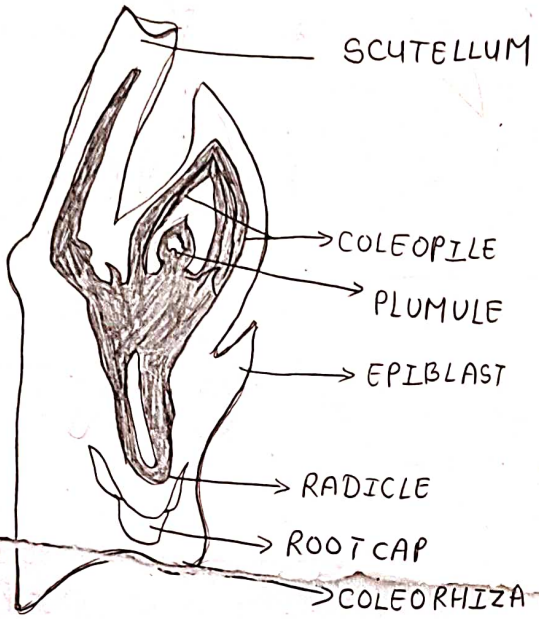


FIG = EMBRYO IN MONOCOT SEED

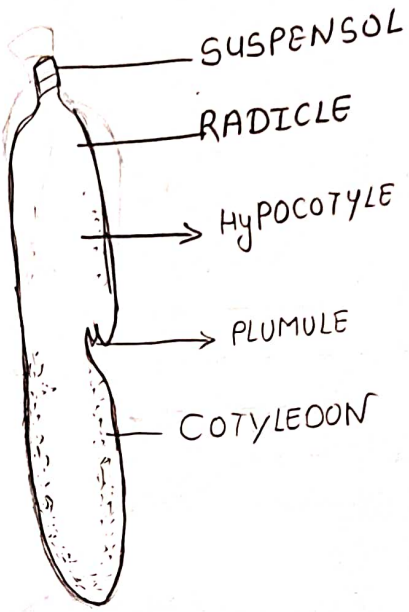


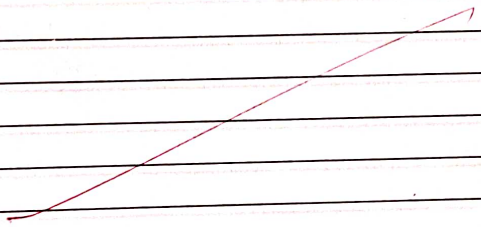
FIG = MONOCOT EMBRYO

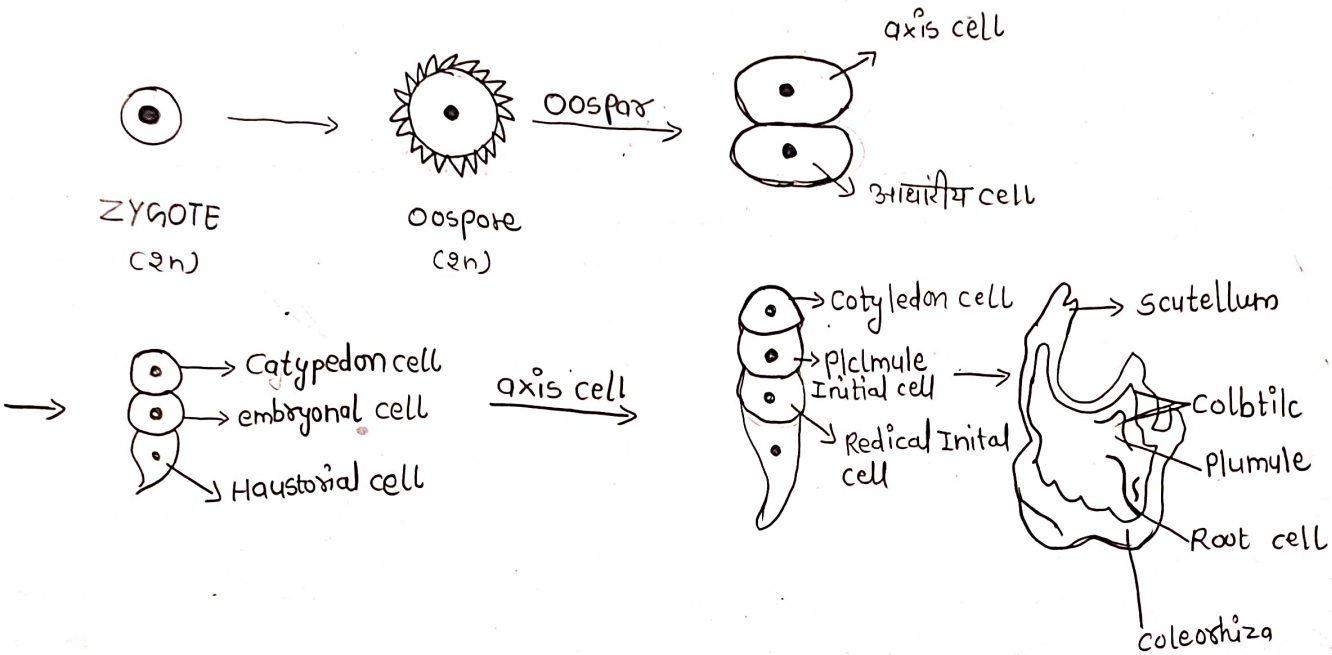
Date
Page

→ In angiosperm the meroblastic embryo development is present. these are endoscopic.

→ In grass family seed coat is called scutellum. which is present on the posterior part of ovule axis.

→ Scutelum attachment the above embryo axis is known as seed is ~~to~~ called Seedcoated.




axis cell
Oospar
आधारीय cell
ZYGOTE
(2n)
Oospore
(2n)
Cotypedon cell
embryonal cell
Haustorial cell
axis cell
Cotyledon cell
Plclmule
Initial cell
Redical Inital
cell
Scutellum
Colbtilc
Plumule
Root cell
Coleorhiza

Date
Page

Developement of Dicot Embryo.

Object :→ In dicotyledons study of embryo development

Method → Firstly, the Hanstein discovered the foetal development in capsulla.

→ By Transeverse section in oosperm there is formation of two cells. Towards ovary gate the made cells basal cells and apical cells. In the axis cell or apical cell the division occur on equal time.

→ The Basal cell divided by Transverse section and foetal cell divided by perpendicular division. The surrounding cells of this stage is present in T-shape two ovary cells divided by development. In this stage the 8 cells divided in the two circles. that is called Octant.

→ In the cells by transverse section the 6-10 cells structure is called suspensor. It is foetal is push in the depth and provide nutrition.

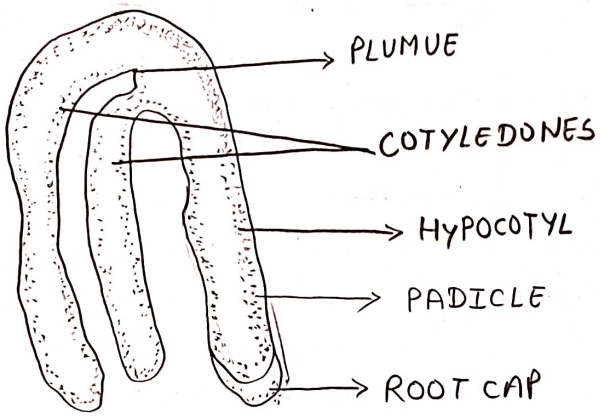


FIG :- MATURE DICOT EMBRYO

Page

→ The cell of Seed becomes wall and bigger this cell is known as Hausorial cell.
→ On ovetaion The Celles are divided in 16 celles and it becomes the Sabe of foitus.

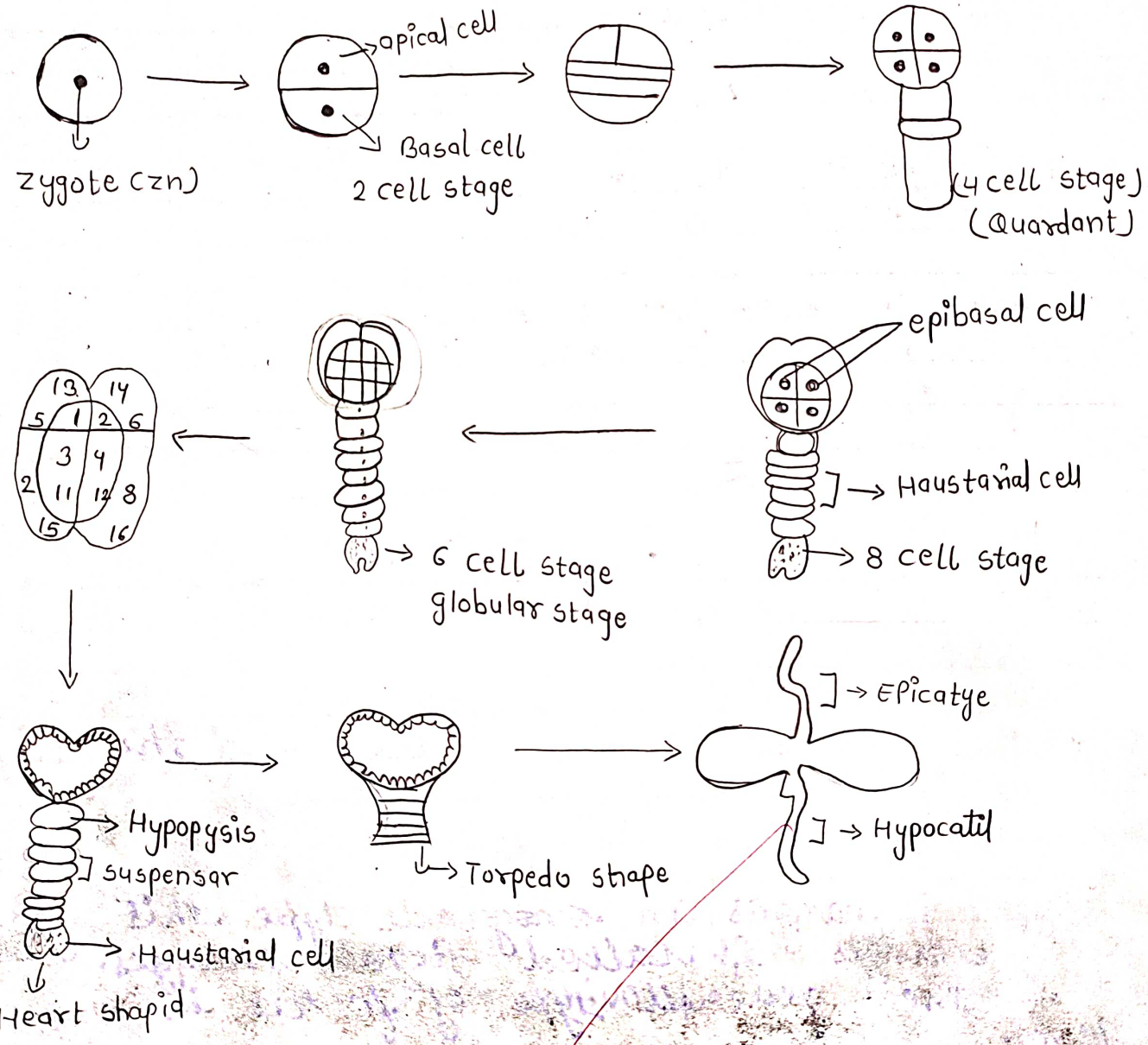
→ This is Colour Heart Sabe and move towards Lowear Side. On this type of dicotyledons Have two seet court which is join with axies. On the Head portion the prankur and On the back portion mulanakar are persent with is Coldal foetal axis.

→ The foetal axis have mancaxis which is called Hypelleum

→ The basal part of Chemgeg in foytes. The making of foutes after is finish. The

→ The moved stage of the foetus is called the Totpido.

→ This type of changes in onograde type this type of changes is called foetal changes. This is the generall type of foetus in angio - Sperm.


apical cell
Basal cell
2 cell stage
Zygote (zn)
(4 cell stage)
(Quardant)
epibasal cell
Haustarial cell
8 cell stage
6 cell stage
globular stage
Epicatye
Hypocatil
Torpedo shape
Hypopysis
suspensar
Haustarial cell
Heart shapid

Date
Page

ADAPTATION of Plants

Date
Page

Boerhaavia Stem:-

Object :→ To study the presence of tissue organ in Boerhaavia stem.

Process → To put Boerhaavia stem in pith and take its transverse section. after this it put in glycerin. and study the tissue organ by microscope.

Outer Skin:→ This is outer layer of this on which the cuticle and multicellular rome are present.

Vulkut:→ The outer layer is about made of collenchyma and in this the cell wall are present.

→ In the cells the inter cells air holes are present. and in this cells the salt is present.

→ Inner Skin:→ This is no scen clearly. after this the outer class the presence of cambium the secondary chroam and in inner side the secondary xylem circle is seen. In the inner side the two transfer full like is present. this are present in bone marrow. so, all are called Marrow bridge.

Page No. :.....

Date :.....

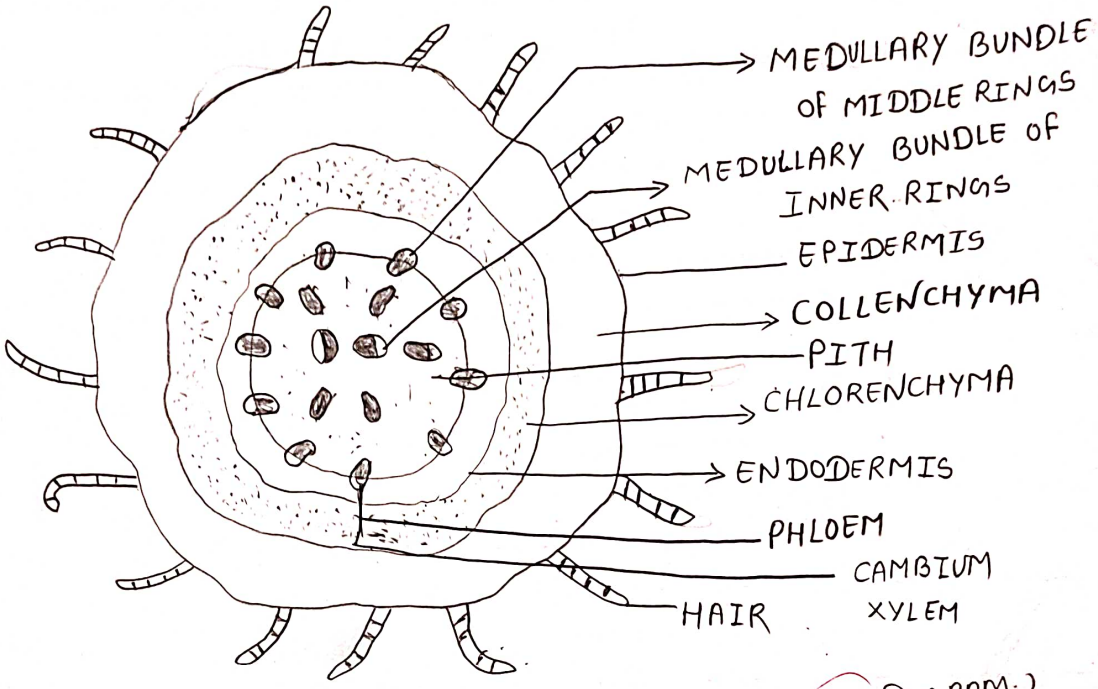


FIG 8- T.S. STEM of BOERHAAVIA (OUTLINE DIGRAM)

Date
Page

Marrow :→
In the mid of Stem the easily made cells the marrow is present.

Identification :→

Stem :→
1. Transfered pull
2. Transfered pull increased and strong.

Dicotyledons :→
1. Vulkut division
2. transfer pull and arranged in manner.
3. secondary growth is present.

Unequall structures :→

1. In given stem of Boherrea the ungenerally state of cambium is seen.
2. The transferred pull is arranged in solution. Two circles are in marrow.
3. While out of this the circles are 6 to 14 and small transfer pulls are present.
4. On the outer circle the inter or intra pull are positive. and which are secondary phloem and make xylem to the outer side.

PTC

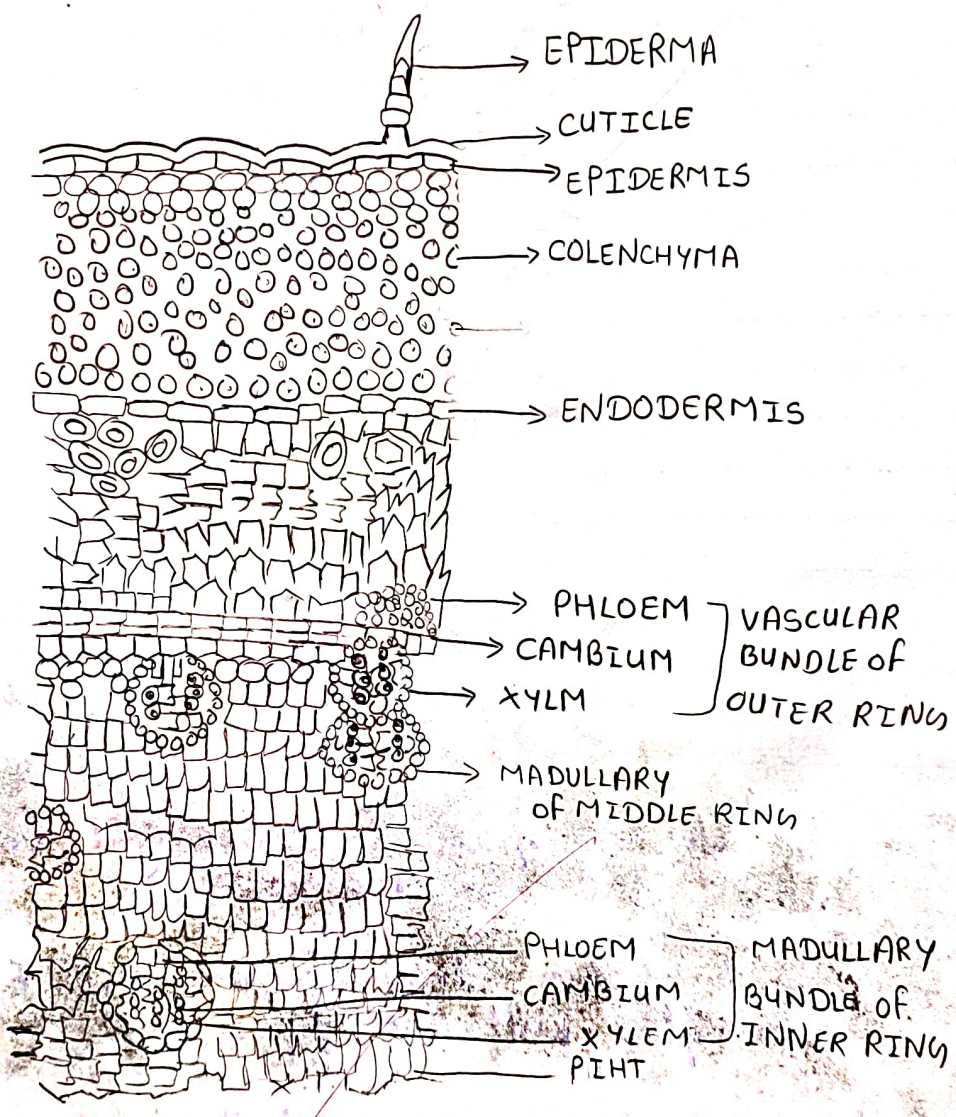


FIG 8- T.S. of BOERHAAVIA STEM (CELLULAR Part)

Page

Leptadaenia Stem T.S.

Object :→ To study the T.S. of stem Leptadaenia.

Process→ To put T.S. of Laptadaenia stem in pith and cut its transverse section and after this it put in double stain and to mount glycerin and study of tissue structure.

The T.S. of Laptadaenia stem :→ In laptaedaenia some tissues are can be seen.

Outer skin :→ Epidermis :→ ① This is round stem's outer structure.
② and surrounded by cuticle.
③ In this multicellular some are present.

Cortex :→ ① It is made up of 4 to 5 valkut level tissue.
② Outer wall of valkute is made up of soft cells.
③ In cells the green pigment are present.

Endodermis :→ In this the internal structure is not present.

Outer Structure :→ It is made up of marrow and this is present soft cells in median.

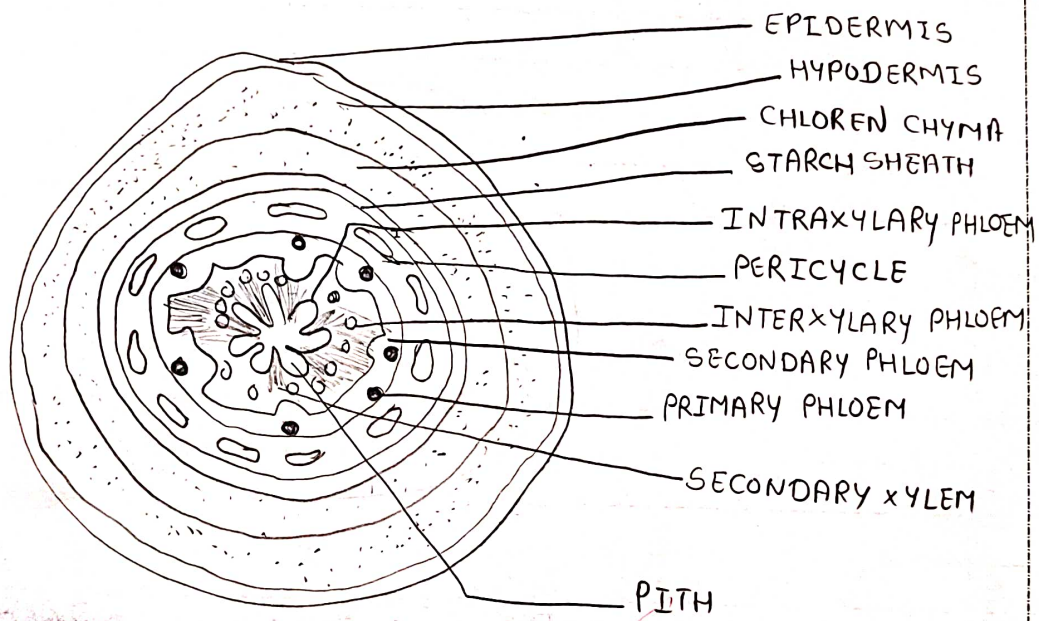


FIG. – T.S. of LEPIADERNIA STEM (DIAGRAMMATIC)

Date
Page

Convection System:→

(1) In convection system the primary and secondary phloem and xylem made.

(2) In the primary phloem the cells are present in it.

(3) Secondary phloem is present in a circle. in which tubes, cells and soft cells are present.

(4) The primary cell is near to pith. and outer radius of internal phloem is present.

(5) Secondary xylem is a fully form presence. and its arranged in a manner.

(6) and In this the vessels, cells are arranged in proper manner.

(7) One or multilayer marrow are present in convection system.

Pith:→ In the mid position the undeveloped pith is present in stem.

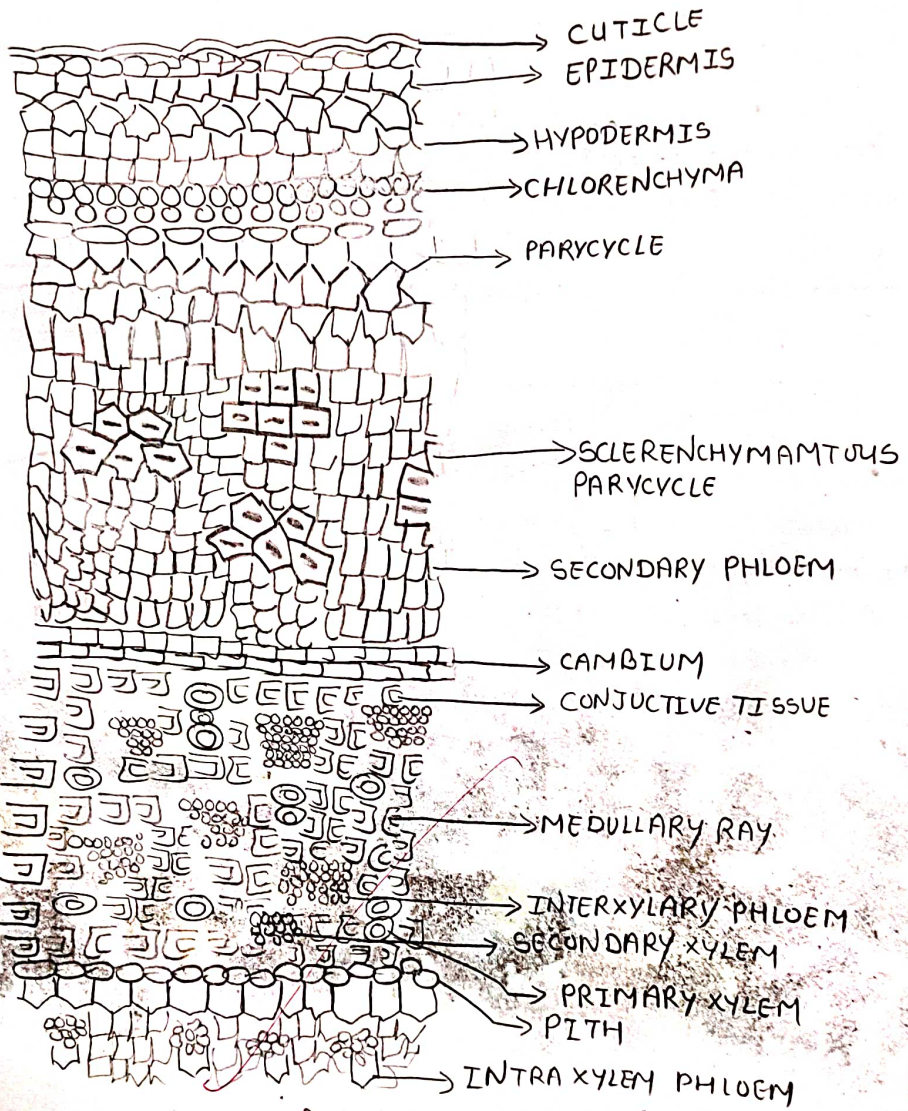


FIG. 8- T.S of LEPADENTA STEM (CELLULAR PART)

Date
Page

Dracaena Stem. T.S.

Object :→ In the stem of Dracaena study of T.S. and unequal structure study.

Process :→ In the T.S. cut of Dracaena and Sacreline and Castgreen are double strain and by this to study the structure by microscope.

T.S. of Dracaena Stem :→ In the Round stem the study of Dracaena stem.

Periderm :→
It is made up of, soft cells. the cells of cork are rectangular and on these the thick layer of fat suberin.

→ In this layer the holes are present.
→ Cork is made up of easiest and soft cells.
→ This layer is small level type.

Cortex :→ This area is made up of easist cells. and in the mid the inter air place are present.
In these cells fluid is present.

Page No. :.....

Date :.....

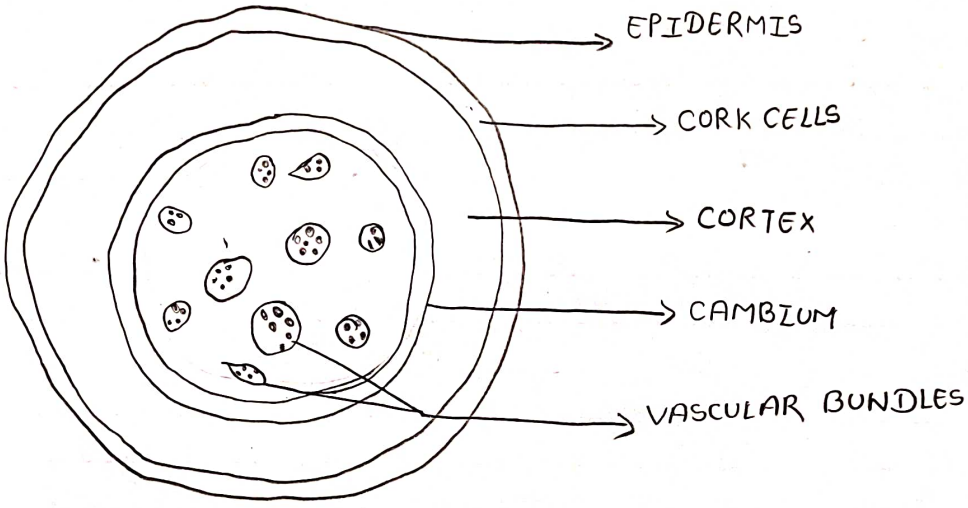


FIG :- T.S. of STEM DRACAENA (outline diagram)

Date
Page

Meristamatic tissue :—

→ This layer is present in lower surface.

→ It is made up of rectangular cells.

→ It is made multilayer area.

Vascular bundle :→

→ In divided area the some small vascular bundles are present on the phloem.

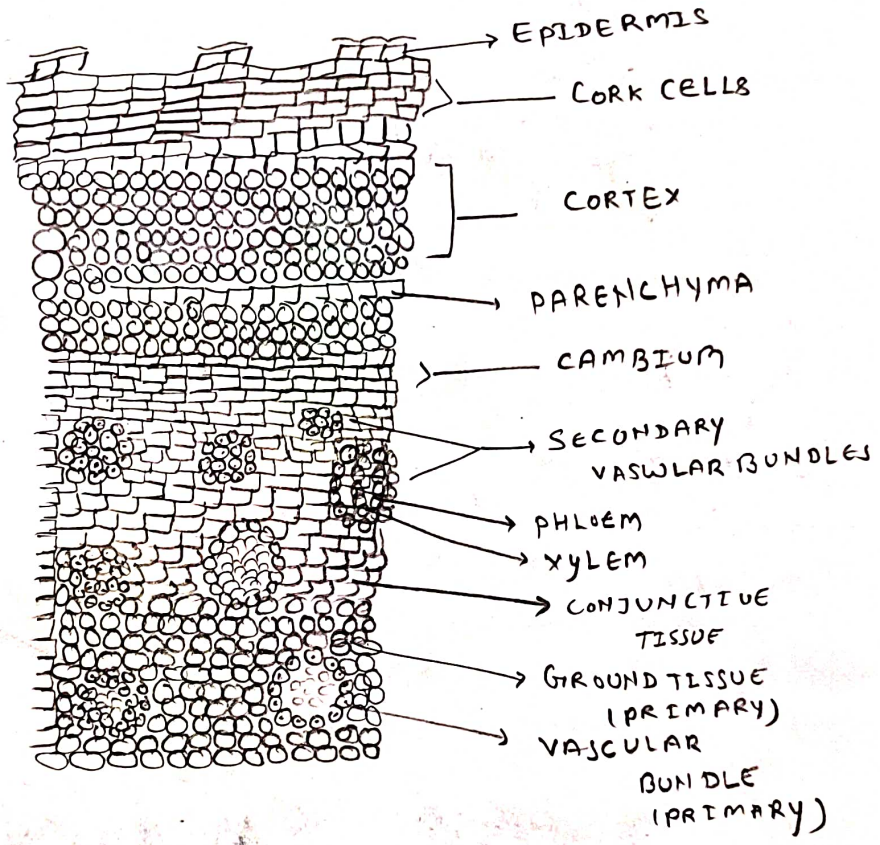
→ In secondary phloem the soft phloem are present. and In secondary xylem the tubes and soft xylem is present.

→ Each meristmatic tissue the shape is long and ovule shape, complex and close type.

→ The main part of stem the is made up of tissues.

Page No. :.....

Date :.....


EPIDERMIS
CORK CELLS
CORTEX
PARENCHYMA
CAMBIUM
SECONDARY VASWLAR BUNDLES
PHLOEM
XYLEM
CONJUNCTIVE TISSUE
GROUND TISSUE (PRIMARY)
VASCULAR BUNDLE (PRIMARY)

Date
Page

Cucurbita Stem T.S.

Object :→ To study the T.S of cucurbita stem.

Process :→ The stem of cucurbita put in the pith and cut its T.S by blade's help. after this do its double staining. and study the tissue organ with microscope.

T.S. of Cucurbita stem :→ To take the T.S. of cucurbita stem of cut. we see the meristemic tissue. In the outer layer see the raised shoot is present.

Outer Skin :→ It is the outer layer. which are soft cells which are like to bottal shapes cells. on this the surrounding the presence of cuticle and multicellular homes.

Cortex :→ The level of this is decreased. and Absent. In cortex present of soft cells the green pigment.

Outer Skin :→ In the cortex layered surface. In the presence of mained the is called archand.

Date :.....

Page No. :.....

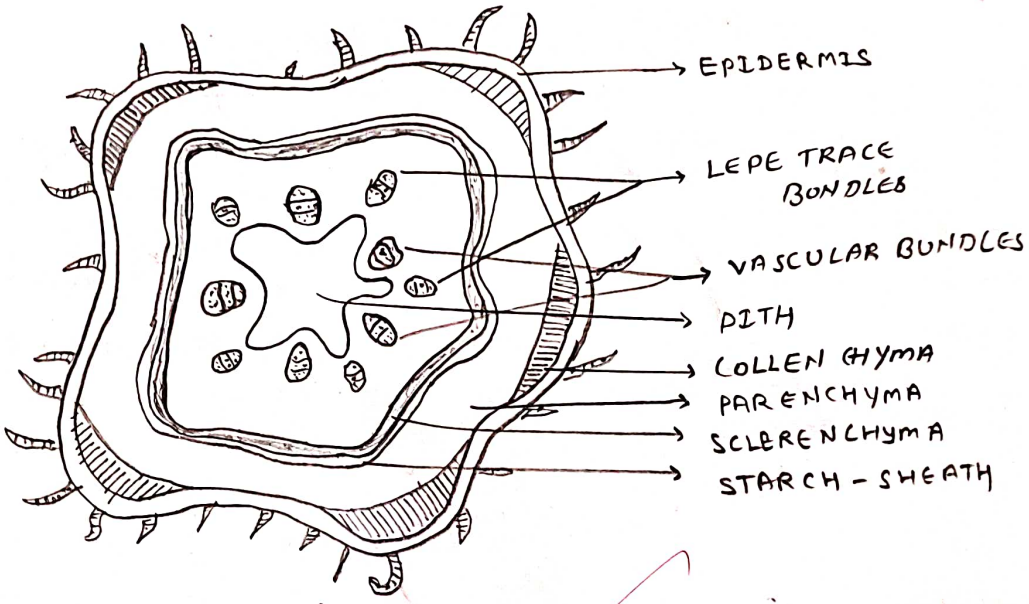


FIG:- T.S of STEM CUCURBITA (OUTERLINE DIG.)

Date
Page

Filler tissue :→ This area is present between the mid of outer area. And in this ten meristemic tissue are present in five-five circles.

Meristematic tissue :→ It is present in two portions. The tissue are small comparison to outer tissue. The meristemetic tissue is present in xylem. On the both side of phloem and cambium layers are present. which are called. Outer and inner layers.

→ The outer layer is straight and inner layer is layered and less layers are present.

Marrow :→ It is made up of star and soft cells.

Page No. :.....

Date :.....

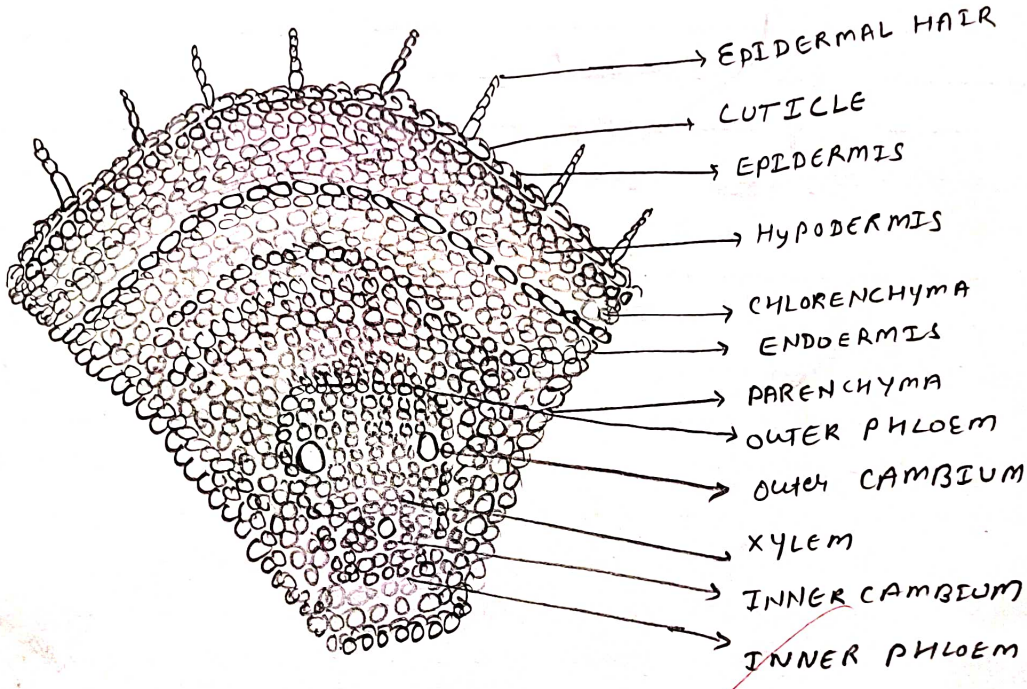


FIG → T.S of CUCURBITA STEM (CELLULAR DIG.)

Date
Page

Zeamays Stem T.S.

Object:→
Monocotyledons Stem took T.S. and Study the tissue organ.

Process:→ The Stem of maize take and and cut it with the help of blade.
and study the mount of glycerin with microscope tissue organ.

T.S. of Maize Stem:→ on cut the T.S. of maize stem some structures are seen.

(1) **Epidermis:→** This is the outer surface of Stem. which is present and made with soft cells. on the upper of this the upper layer is present. on this the multicellular trichomes are present and in some part the blood is present.

(2) **Hypodermis:→** This is the outersurface of lower area. and make two-four cells of easy cells.

(3) **Ground tissue:→** It is present in the inner skin and it is surrounded by, and not divided. but only rounded and soft intercells. which are present in meristematic stage.

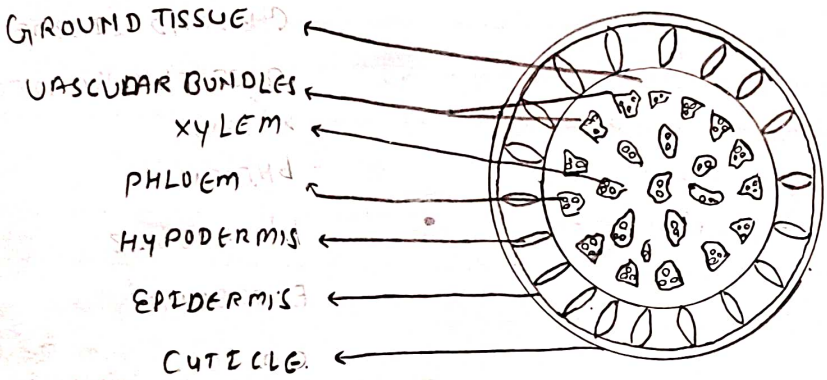


FIG.:- T.S of ZEAMAYS (MAIZE)

Page

④ Vascular bundle :-

→ In stem different shapes of irregular way.

→ It is more in numbers and small in vascular bundle by radius surrounded.

→ In vascular bundles the piths are present.

→ On the upper side the phloem and lower side of xylem are present.

→ In xylem the protoxylem is inner side and metaxylem is present in outer side. So, the vascular bundles are closed.

→ On the vascular side the soft cells and tissue are present.

→ In phloem the tubes and cells are present. and soft cells are absent.

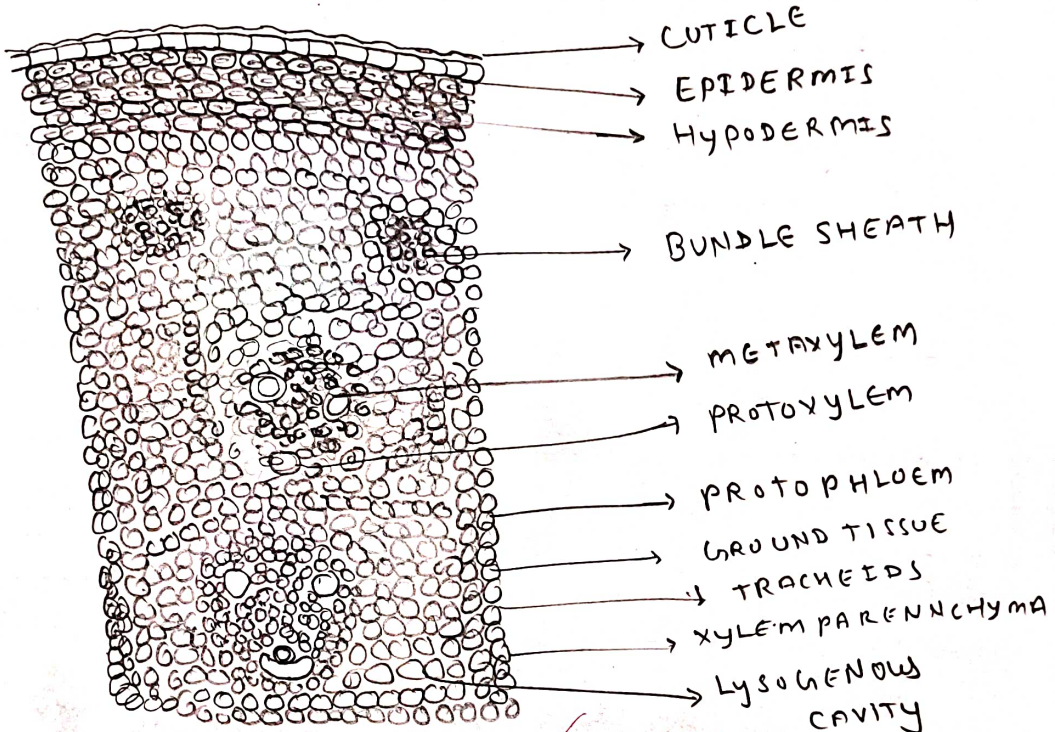


fig :- T.S of zeamays (CELLULAR PART)

Page

Nerium Leaf T.S.

Object :- Take a T.S. and cut it and study the leaf of Nerium.

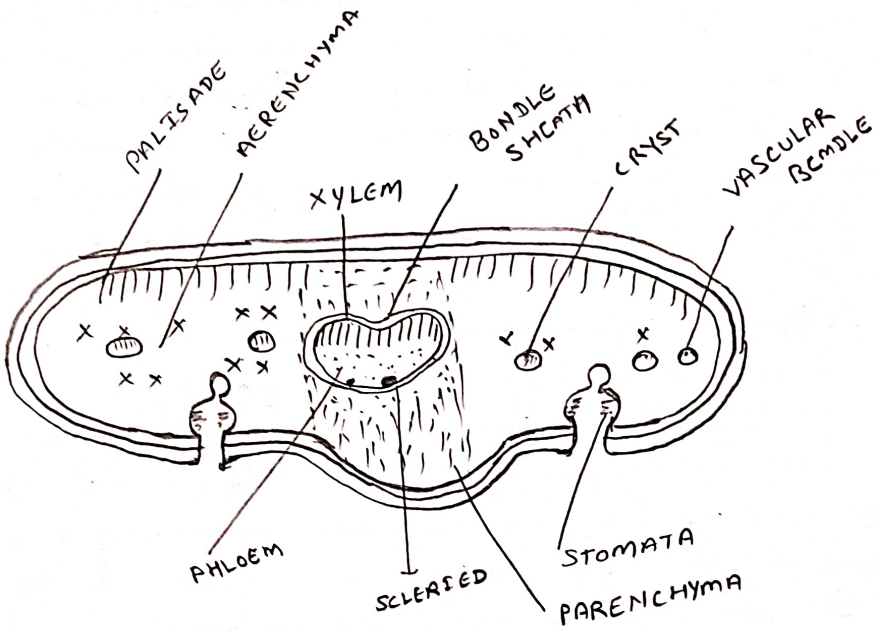
T.S. of leaf of Nerium :- To take T.S. of nerium leaf and this is look flattened type.
In which below areas are found :-

(1) Epidermis :- On the upper surface of leaf and basal surface of leaf are present. In which single and rooms are present. Which low the rate of vapourisation.

(2) Mesophyll :- It is present in upper area. because soft cells are present. In lower layer the outer surface about two rows are present and in this the holes are present in this. In this cell the green pigment is present.

Page No. :.....

Date :.....

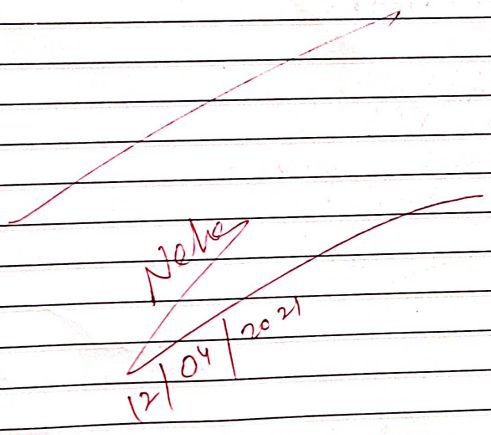


T.S NERIUM LEAF OUTLINE

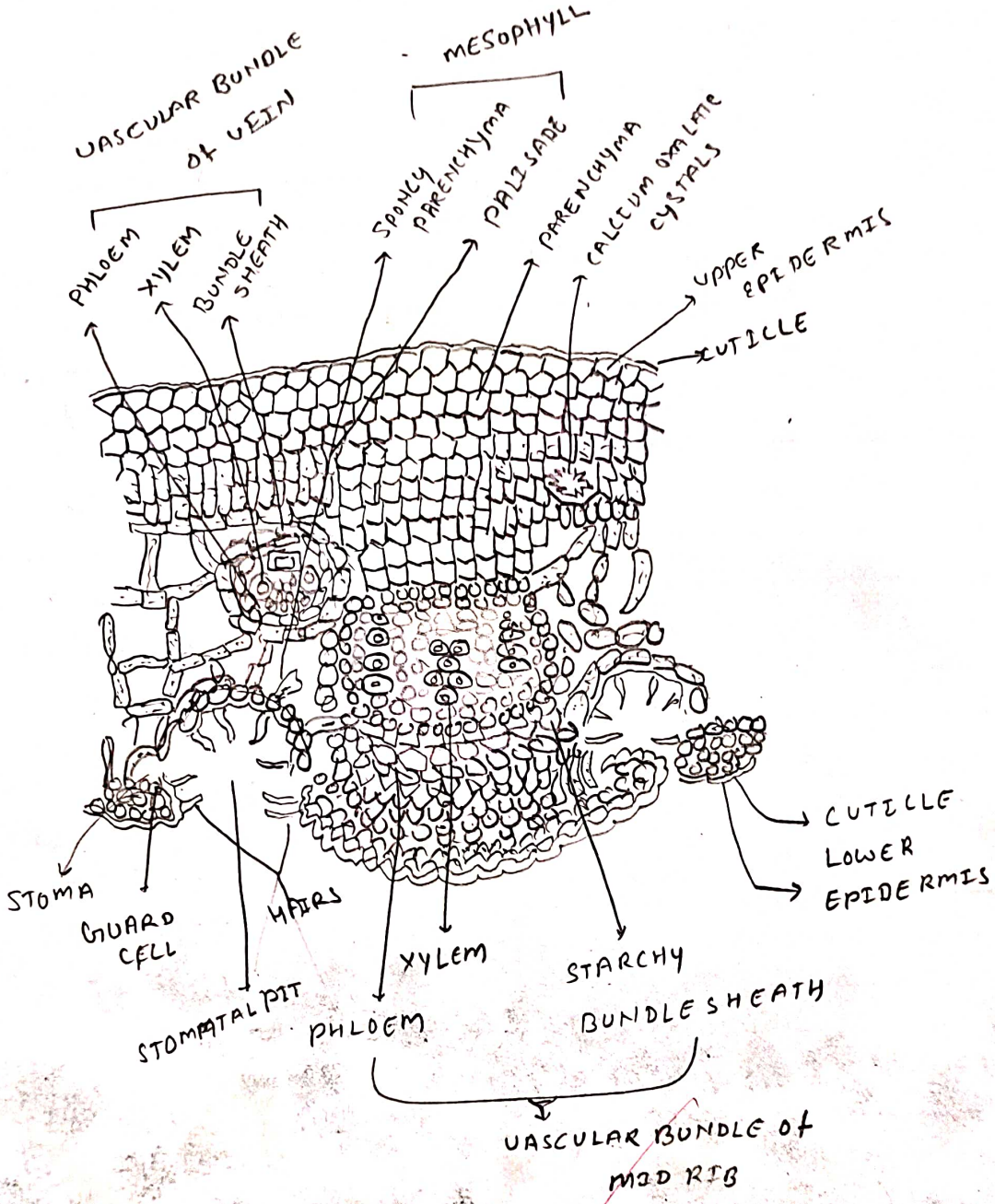
Date
Page

Vascular bundle :-

→ In a big median area have some small and both section are present. and each bundle is complicated and close type and each tissue is soft and surrounded by pulachand.



12/04/2021


VASCULAR BUNDLE OF VEIN
MESOPHYLL
PHLOEM
XYLEM
BUNDLE SHEATH
SPONGY PARENCHYMA
PALISADE PARENCHYMA
CALCIUM OXALATE CYSTALS
UPPER EPIDERMIS
CUTICLE
CUTICLE
LOWER EPIDERMIS
STOMA
GUARD CELL
HAIRS
STOMATAL PIT
XYLEM
PHLOEM
STARCHY BUNDLE SHEATH
VASCULAR BUNDLE of MID RIB