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# EXPERIMENT No. 1

Object:— To study and identify the stages of gamete development i.e. T.S of testis.

Requirements:— permanent slide of T.S of testis. microscope.

procedure:— fix the permanent slide under the microscope first observe it under the low power & then under high pressure.

## Observations:—

- i) The mammalian testis is covered by a thick fibrous tissue called tunica albuginea
- ii) Testis consists of outermost layers.
- iii) Testis have long convoluted seminiferous tubules
- iv) Spermatogonia are formed from germinal epithelium of seminiferous tubules.
- v) Long cells known as Sertoli cell are present which provide nourishment to the spermatogonia.

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vi) sperms can be observed collected in the centre of seminiferous tubules.

vii) Interstitial tissue also contains Leydig cells which provide male sex hormone - testosterone. Interstitial cells are in the sequence

spermatogonia → spermatocytes → spermatids.

sperms ← spermatogoa

### Precautions:

i) First focus the slide under low power and then under the high power of the microscope.

ii) Use fine adjustment while focussing the slide under high power of the microscope.

## EXPERIMENT No. 2

Object — To study and identify the stages of gamete development i.e. L.S of ovary through permanent slide.

Requirements — permanent slide of L.S of ovary microscope.

procedure — fix the permanent slide under the microscope first observe it under the low power and then high power.

Observations — Outermost layer of ovary is germinal epithelium inner to germinal epithelium is a layer of fibrous tissue called tunica albuginea.

Stroma includes cortex and central medulla cortex contains ovarian follicles.

A graffian follicle consists of an ovum surrounded by a group of follicular cells. Follicle cells of graffian follicle secrete estrogen and cells of corpus luteum secrete estrogen! follicles mature and migrate to the ovum surface where they burst to release.

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ovum degenerating of corpus luteum is known as corpus albicans.

Precautions:—

- i) First focus the slide under low power and then under the high power of the microscope
- ii) Use fine adjustment while focussing the slide under high power of the microscope

# EXPERIMENT No. 3

## ENTAMOEBIA

IDENTIFICATION :- Entamoeba histolytica

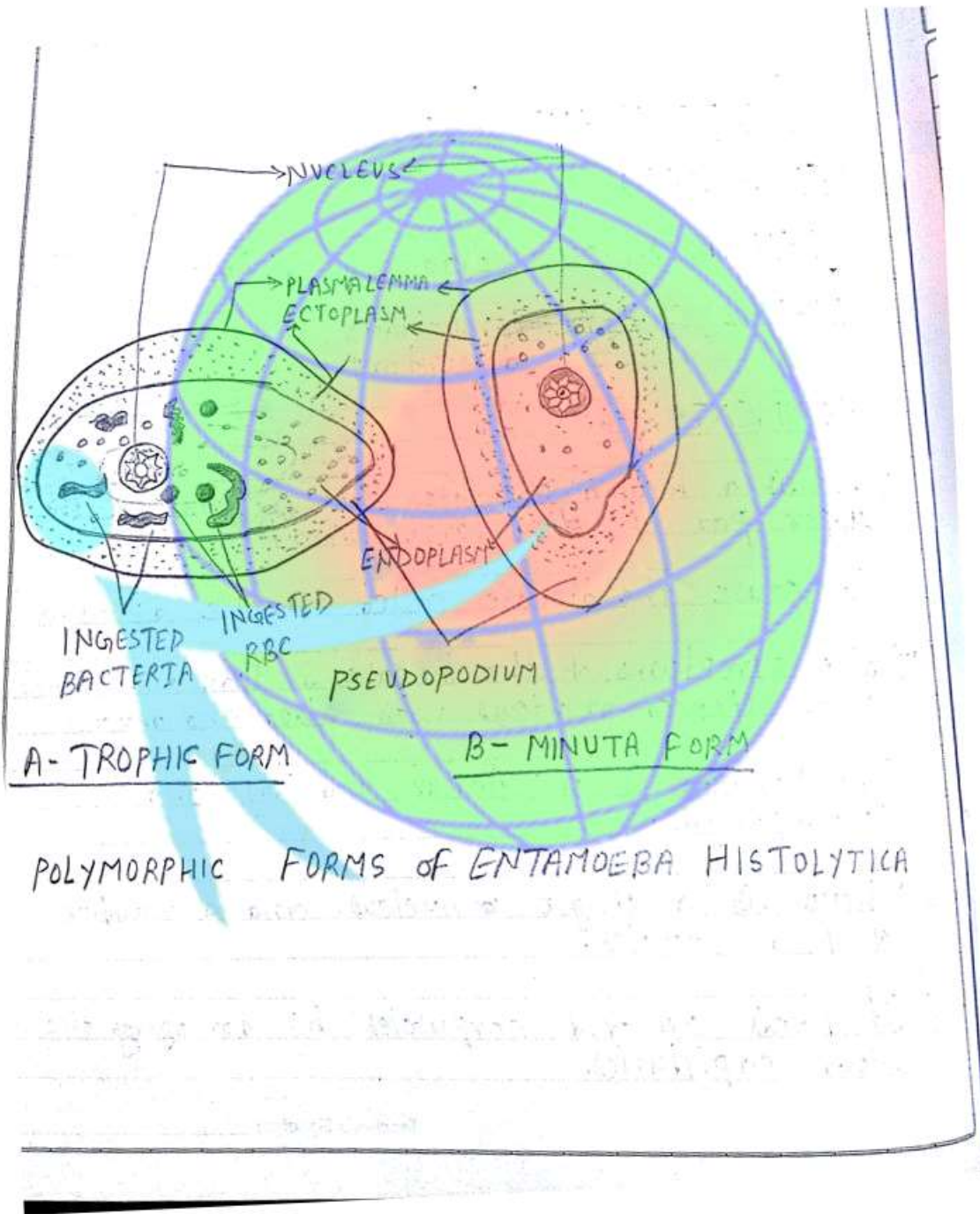
DISEASE CAUSED :- Amoebiasis or Amoebic dysentery.

COMMENTS :-

- i) It is a human parasite that resides in the upper part of the large intestine.
- ii) It causes the disease called amoebic dysentery.
- iii) The symptoms of the disease include abdominal pain, streaked motions with blood and mucus.
- iv) The parasite is unicellular, and has one pseudopodium.
- v) There is a single nucleus and a number of food vacuoles.
- vi) It feeds on red corpuscles by damaging the blood capillaries.

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vii) It produces ulcers and also can reach other organs.

## PLASMODIUM

Identification: - Plasmodium Vivax (Malarial Parasite)

Disease caused: - Malaria

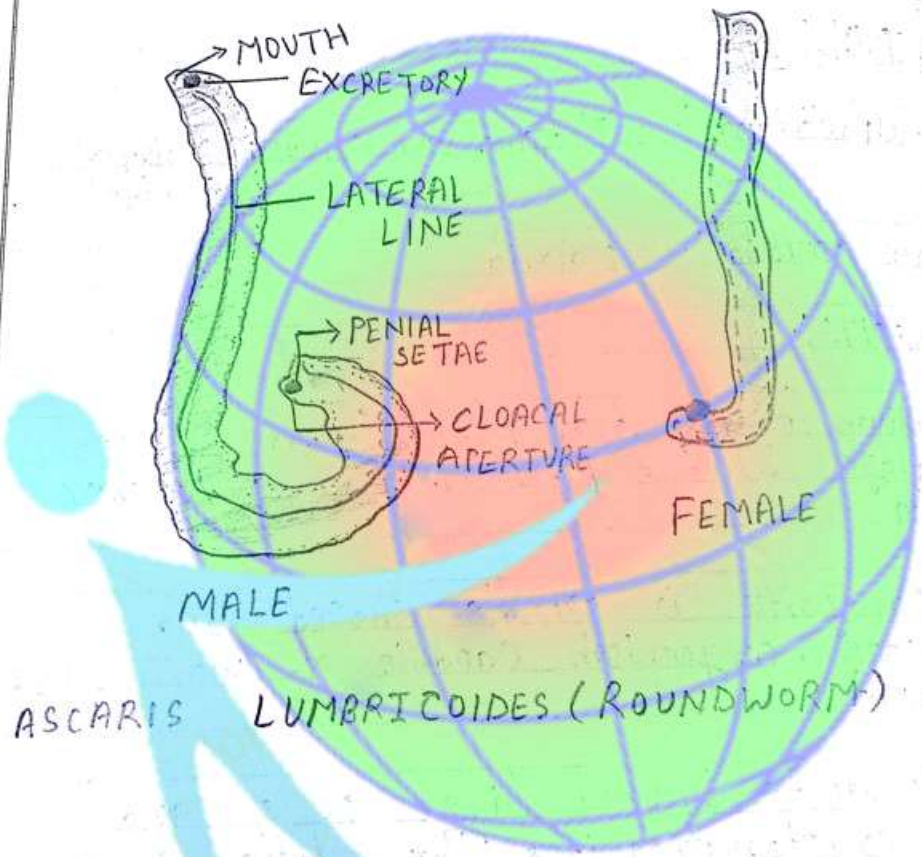
### COMMENTS: -

- i) Plasmodium enters the human body in sporogonite stage by the bites of female Anopheles mosquito.
- ii) The sporogonite is spindle shaped and uninucleate, organism capable of wiggling movement.
- iii) The sporogonite infect liver cells and produce cryptomerogonites. The latter enter new liver cells and produce merozoites.
- iv) The merozoites enter RBC's and pass through trophozoite, ring stage and gametocyte stage and produce schizont and merozoites.

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merogaites.

- v) The merogaites enter fresh RBC's and produce gametocytes.
- vi) The gametocytes reach into mosquito's stomach when the latter sucks the blood of infected human host.
- vii) The male and female gametes fuse to form zygote. the latter becomes worm like, called ookinete, which penetrates in the wall of stomach and forms oocyst.
- viii) The oocyst produce sporozoites which are released in the haemolymph of the mosquito and reach into the salivary gland and make the mosquito infective.

### Symptoms:

- i) The symptoms of malaria fever, appear about 14 days after the infectious bite.
- ii) Early symptoms include restlessness, less appetite, slight sleeplessness followed by muscular pain, headach and feeling of chilliness.

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- iii) In response to chills, the body temperature starts rising, and may reach at the height of fever of 106 F
- iv) The patient sweats a lot and the temperature steadily goes down to normal. Till the next attack takes place after 48 hours.

### ASCARIS

Identification:— *Ascaris lumbricoides* (the giant intestinal roundworm)

Disease caused:— Ascariasis

### COMMENTS:—

- i) It is an endoparasite of the small intestine of human beings & is more common in children.
- ii) The animal shows sexual dimorphism. The female is longer than the male.
- iii) The posterior end of the male is curved ventrally.
- iv) In female, the genital opening is present.

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on the mid-ventral line at about one-third of the length from anterior end.

v) In male from the cloaca, two equal chitinous spiracles on pineal setae project which help in coagulation.

Symptoms:—

- i) Generally a large no of adult *Ascaris* worm infect a single host and obstruct the intestinal passage and thereby cause abdominal discomforts like colic pains.
- ii) The patient may also suffer from impaired digestion, diarrhoea and vomiting.
- iii) In children, mental efficiency is affected and growth of body is retarded.

## EXPERIMENT No. 4

Object:- To study T.S of blastula through permanent slide.

Requirements:- Permanent slide of blastula, microscope

Procedure:- Fix the slide of T.S of blastula under microscope first observe the slide under low power & then under high power.

Observations:-

- 1) It is a spherical mass of about sixty four cells
- 2) It is composed of an outer envelope of cells the trophoblast or trophoblast and inner cell mass (= embryoblast)
- 3) Within the envelope, there is a fluid filled cavity called blastocoel.
- 4) The side of the blastocyst to which the inner cell mass is attached is called the embryonic or animal pole, while the opposite side is the abembryonic pole.

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5) The inner cell mass is the precursor of the embryo.

### Precaution:-

- i) First focus the slide under low power and then, under the high power of the microscope.
- ii) Use fine adjustment while focusing the slide under high power of microscope.



## EXPERIMENT No. 5

Study of plants & animals found in xerophytic conditions:-

ZIZYPHUS NUMMULARIA (BERI)

COMMENTS:-

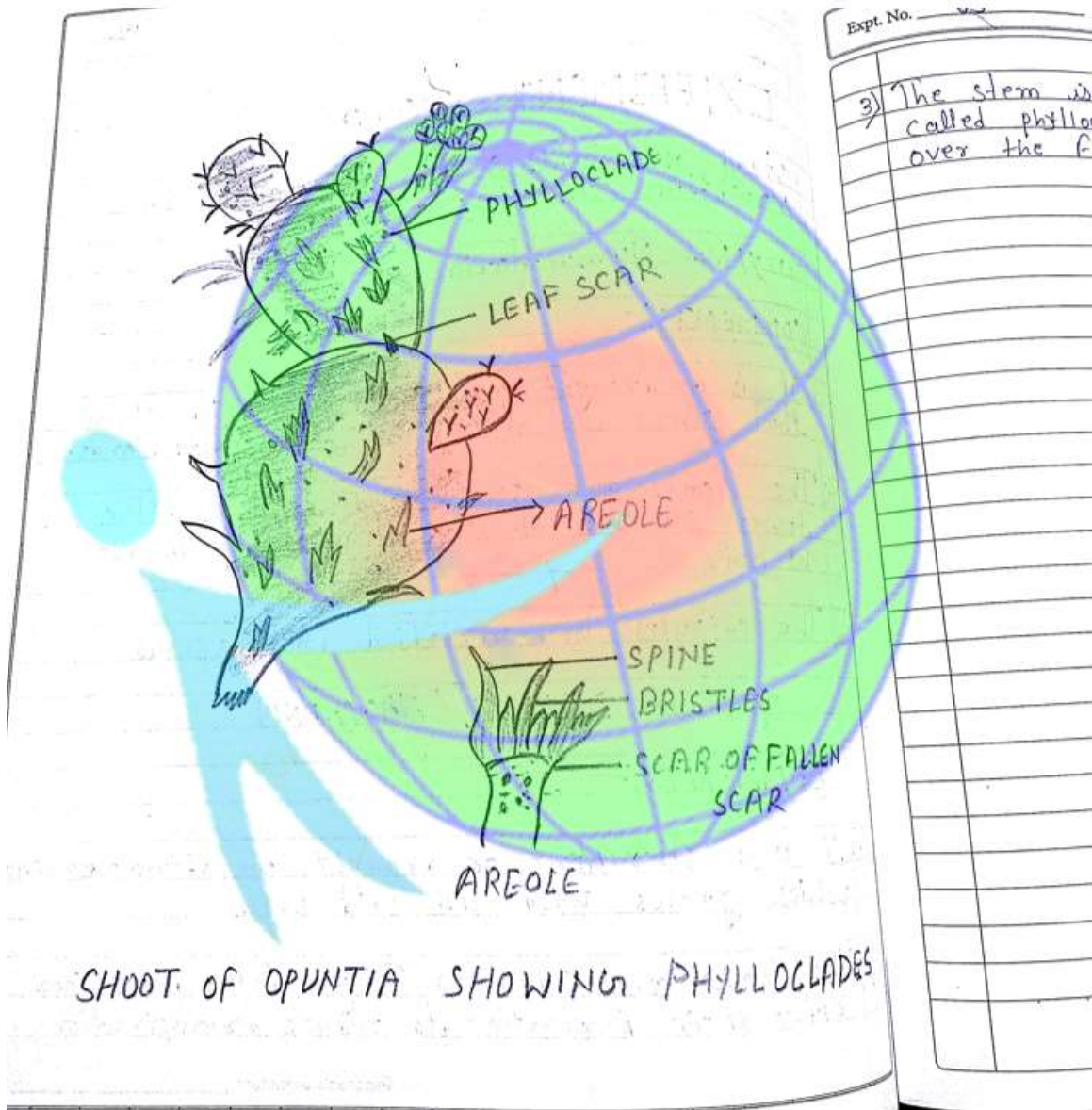
- i) It is a drought enduring spiny wild shrub that grows in arid areas and waste lands.
- ii) The leaves are small and leathery. The lower surface of the leaves is covered by hair.
- iii) The stipules are modified into spines.

OPUNTIA DILLENI (NAGPHANI)

COMMENTS:-

- 1) It is a succulent or drought resisting xerophyte which grows wild in arid areas.
- 2) The leaves are caducous. They fall down soon after their formation to reduce transpiration.

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3) The stem is jointed, flattened and green called phylloclades. It is green and takes over the function of photosynthesis.



# EXPERIMENT No. 6

Name of the experiment: —

To test the presence of inorganic salts in different soil samples.

Chemical requirements: —

Soil samples, BaCl<sub>2</sub> solution, Aluminium chloride, ammonium molybdate, 0.5% solution of diphenyl amine in conc. H<sub>2</sub>SO<sub>4</sub> acid ammonium oxalate, H<sub>2</sub>SO<sub>4</sub>, HNO<sub>3</sub>, AgNO<sub>3</sub>, glacial acetic acid, NH<sub>4</sub>OH, methyl orange

Apparatus Required: —

Test tube, beaker, conical flask, distilled water, spirit lamp.

PROCEDURE: —

## 1) Determination of pH

- Add soil sample to 5 ml distilled water
- Dip a small piece of pH paper in the soil water suspension
- Match the colour with the colour scale given on the pH paper booklet
- This gives an approximate pH.

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## 2) Preparation of soil extract

- Take about 50 gm of soil sample and add 200 ml of distilled water in a conical flask.
- Shake it well for an hour and leave it one night, so that all the soluble salt may dissolve in water.
- Now filter the solution and collect the filtrate

## 3) Test for the presence of nutrients

### (i) Test for calcium:-

- Take 100 ml of filtrate
- Add 200 ml of glacial  $\text{HNO}_3$  acid and 3-4 drops of methyl orange indicator
- Add  $\text{NH}_4\text{OH}$ , so that pink colour of methyl orange disappears
- Now add ammonium oxalate
- Appearance of white precipitate indicates the presence of calcium

### (ii) Test for nitrate:-

- Take 10 ml of filtrate
- Add 0.5% solution of diphenyl amine in conc  $\text{H}_2\text{SO}_4$  acid
- Appearance of blue colour indicate the presence of nitrate

### (iii) Test for phosphate:-

- Take 10 ml of filtrate
- Add a few drop of ammonium molybdate

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$\text{HNO}_3$  & few ammonium nitrate.

Appearance of yellow colour indicates the presence of phosphate.

### OBSERVATION:-

S.No	SOIL SAMPLE	PH OF THE SOIL	CAICIM	NITRATE	PHOSPHATE
1	5 ml	Slightly acidic	-	-	-
2	100 ml	-	+	-	-
3	10 ml	-	-	+	-
4	10 ml	-	-	-	+

### PRECAUTION:-

- 1) Wash the glass ware thoroughly and get it oven dried before the experiment
- 2) Use standard reagents



## EXPERIMENT No. 7

Name of the Experiment:—  
to study pH of different types of soil

Requirement:—

Soil Sample (from two different sites such as garden soil and road side soil) test tube, funnel, filter paper, pH paper, pH paper of different sample, Distilled water, beaker, glass rod

PROCEDURE—

- 1) Dissolve one table spoon soil from each soil sample in 100 ml of distilled water
- 2) stir the solution well and keep for half an hour to settle down the suspended particles.
- 3) Filter off each solution in different test tube
- 4) Dip a small piece of broad range pH paper in each of the said solution
- 5) Match the colour of the pH paper with the colour scale.
- 6) This gives an approximate pH
- 7) Match the colour of the paper with the pH scale given on the pH paper booklet

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OBSERVATION:- Record the PH of different soil sample in the observation table

S. No	SOIL SAMPLE	PH
1	from garden	7.6
2	from roadside	6.5

PRECAUTION:-

- 1) Wash the glassware thoroughly and get it oven dried before the experiment.
- 2) Use standard reagents.

## EXPERIMENT No. 8

Name of the Experiment:—

To study the flower's adapted to pollination by different agencies (wind, insects etc)

Requirement:— Fresh flower's of maize or any other cereals grass, solive, osmium and brassica forceps, hand lens, slide, needle etc

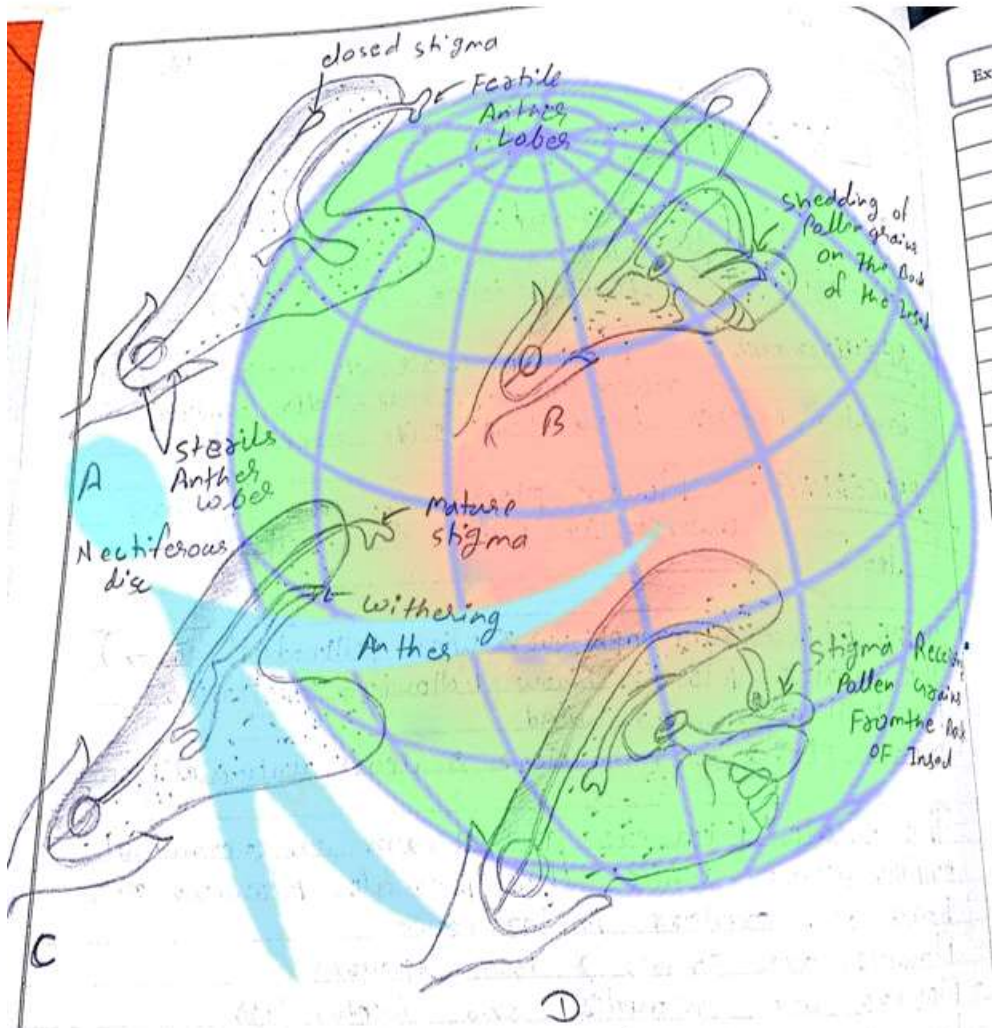
PROCEDURE:— Flower placed on a slide and observe it with the help of hand lens

MAIZE FLOWER (anemophilous & wind pollinated flower)

- The maize flower show following adaptation's for pollination by wind
- Maize plant is monoicous & bears unisexual flower's
- The male flowers are form in terminal inflorescence while the female flowers are born in axillary inflorescence
- Flowers are small & inconspicuous
- Flowers are colourless and hector less
- flowers are produced above the foliage in hanging position

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Pollination In Salvia

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- Both the stigma and anthers are exerted
- Anthers are vesatile and pollen grains are light small and clusti
- The pollen grains are produced in very large numbers
- Stigma is hairy, feathery or branched to catch wind borne pollen grains

### SALVIA FLOWERS (ENTOMOPHILOUS OR INSECT POLLINATED)

- The flower of solvia shows following adaptation for pollination by insects
- The flowers are brightly coloured for attracting pollinating insects.
- The flowers are born in verticillastor inflorescence to become conspicuous.
- Flower secrete nectar to feed visiting insects
- Nector glands are placed must touch both the anthers and stigma.
- the flowers have landing platform for the insects
- The flowers are protogynous with bilipped corolla & have liver mechanism
- Each stamen has long connective which bears a fertile anthers lobe at the upper end sterile plate like anther lobe at the lower end the two sterile anther plate block the path of insect
- As the insect moves inward a young flower

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Search of nectar, its head pushes the anther plate and forces the fertile anther lobe to strike against its back.

- In older flowers, the style brings the stigma in a such position that it brushes against the back of insects and collect pollen grains brought by the insects and collect pollen grains brought by the insects from a young flower



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