Seventh-day Adventist Higher secondary school, Maninagar, Ahmedabad.

BIOLOGY **6th GRADE**

CHAPTER-1

PLANT LIFE

OBJECTIVE EVALUATION:

A. CHOOSE THE CORRECT ANSWER:

1.The outermost whorl of the *hibiscus* flower is

a. **calyx**

b. corolla

c. epicalyx

d. androecium

2. Rafflesia is pollinated by

a. bee

b. wind

c. **elephant**

d. bird

3. Cotton seeds are dispersed by

a. water

b. animals

c. **wind**

d. explosive mechanism

4. Stigma is a part of the

a. androecium

b. **gynoecium**

c. calyx

d. corolla

5. Viviparous germination is shown by

a. **mangrove**

b. banyan

c. bean

d. maize

6.Receptacle is

a. the outermost whorl of the flower

b. the innermost whorl of the flower

c. protects the flower with which it is attached to the stem

d. **the upper expanded tip of the flower stalk**

7. Which of the following statements is not true for the calyx?

a. generally green in colour

b. outermost whorl of the flower

c. protects the flower in the bud stage

d. **produces pollen grain**

8.After fertilisation the ovary becomes the

a. flower

b. **fruit**

c. seed

d. embryo

9. Which is the innermost hard layer of the fruit?

a. pericarp

b. **endocarp**

c. mesocarp

d. epicarp

10. Which of the following are correctly matched?

i. Dispersal of seed by wind- Cotton

ii. Dispersal of seed by water- Coconut

iii. Dispersal of seed by animal- *Xanthium*

a. i and ii

b. i and iii

c. **i , ii and iii**

d. none of these

B. FILL IN THE BLANKS:

1.After the pollen grain reaches the stigma of the flower, it produces a **pollen tube.**

2. Fruit of **coconut** have a spongy outer covering.

3. Fruits are good sources of **vitamins**.

4. **Cotton** seeds have hairs on their surface.

5. **Palm** and **papaya** trees have incomplete flowers.

6. Hibiscus flower has **5** sepals that are **fused**.

7.The flattened, expanded part of leaf is the **leaf blade**.

8. The **venation** of leaves help in circulation of water and food.

C. NAME THE FOLLOWING:

1. Second whorl of sepals in china rose – **Epicalyx**
2. Type of germination in mangrove – **Viviparous**
3. Part of the flower containing ovules – **Ovary**
4. A flower pollinated by bats – **Silk, Cotton**
5. The dry outer skin of fruits. – **Epicarp**
6. A plant having air-filled seed – **Waterlily**
7. Part of the seed that store food for the baby plant. – **Cotyledons**
8. A seed having hooks – ***Xanthium***

D. GIVE TWO EXAMPLES IN EACH CASE:

1. Seeds dispersed by wind – **Cotton, Grass**
2. Water pollinated flowers – **Hydrilla, Vallisneria**
3. Insectivorous plants – **Venus fly trap, Pitcher plant**
4. Leaves having opposite phyllotaxy – **Jasmine, guava**
5. Compound leaves – **Lemon, orange**
6. Monocot seeds – **Wheat, Maize**
7. Seeds dispersed by water – **Coconut, waterlily**
8. Insect pollinated flowers – **China rose, sunflower**
9. Seedless fruits – **Banana, Grapes**
10. Incomplete flowers – **Palm, papaya**

E. MENTION WHETHER THE FOLLOWING STATEMENTS ARE TRUE (T) OR FALSE (F). IF FALSE, CORRECT THEM BY CHANGING ONLY ONE WORD:

1. Gourd plant bears bisexual flower. – **F**

   Gourd plant bears unisexual flower.

2. Style is a part of the stamen. **F**

   Style is a part of the pistil.

3. Mesocarp forms the pulp of the fruit. - **T**
4. Zygote becomes embryo after fertilisation. – **T**
5. Cobalt chloride paper is pink when dry. – **F**

   Cobalt chloride paper is blue when dry.

6. The tip of the blade is called petiole. – **F**

   The tip of the leaf blade is called leaf apex.

7. Control setup is used to compare results. – **T**
8. Castor seed is a monocot seed. – **F**

   Castor seed is a dicot seed.

SUBJECTIVE EVALUATION:

F. ANSWER THE FOLLOWING QUESTIONS:

1.How are the sepals of *Hibiscus* unique? How many sepals are there?

ANS: China rose is a typical flower, where a second whorl of sepals is present below the calyx. It is known as epicalyx. They are 5 to 7 in numbers.

2. How does the dispersal of fruits by animals occur?

ANS: Some fruits and seeds have hooks, hairs and spines which help them to get attached to the animal skin or body parts and are dispersed by them.

i. **Some plants produce sticky fruits or seeds that are attached to the beaks of bird and are carried by them to long distances.**
ii. **Human beings also throw away some seeds after eating the fruit.**
iii. **Some fruit being undigested thrown out of the body.**

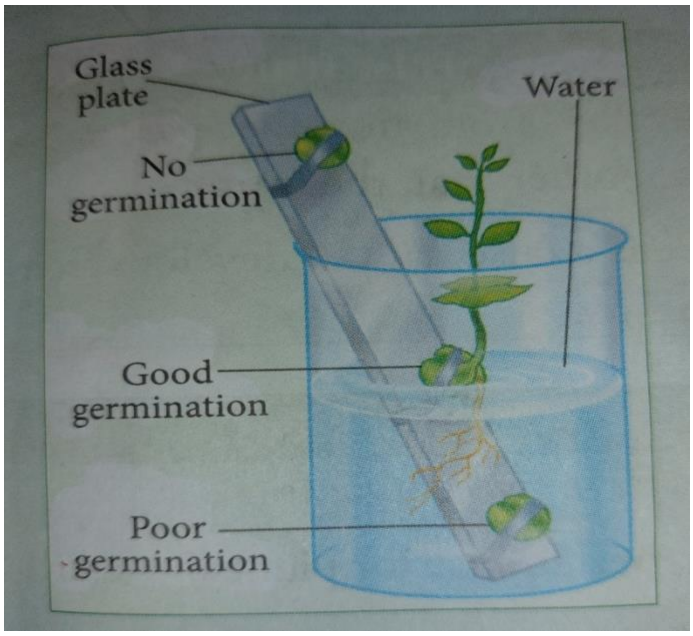
3. With the help of an experiment show that water and air are necessary for germination.

ANS: Take a beaker and fill half of it with water.

i. **Take a glass and tie three soaked seeds (A, B, C) one each on both the ends and one in the centre.**
ii. **Place the glass slide inside the water of the beaker in such a way that seed A is completely submerged in water. Seed B is half in air and half in water and seed C is completely outside water.**
iii. **Keep this setup at room temperature for a few days.**

iv. **It will be seen that only seed B germinates as it receives all the conditions necessary for germination.**

DIAGRAM:



4. What is a control setup?

ANS: Control setup is one in which the condition under study is missing. It is used to compare the results.

5. Draw a labelled diagram of a leaf. Label its parts. Write short notes on each of the parts that you have labelled.

ANS: i. Leaf blade or Lamina: The flattened expanded part of the leaf is called the leaf blade.

ii. **Leaf base: The area at the base of the leaf stalk is leaf base.**

iii. **Leaf stalk or petiole: The short stalk connecting the leaf with the leaf blade is called petiole.**

iv. **Leaf apex: The tip of the leaf blade or lamina is called leaf apex.**

6. Describe the whorled type of phyllotaxy.

ANS: In this type of arrangement, three or more leaves are arranged in a whorl, encircling the stem at the nodal region. Example- *Asparagus.*

7.How does gaseous exchange occur in a leaf?

ANS: The stomata of the leaves, helps in exchange of carbon dioxide and oxygen during respiration.

8.State two special functions of the leaf.

ANS: Leaves are modified to perform special functions like:

i. Trapping of insects: Example- Venus fly trap.
ii. Mechanical support: Example- Sweet pea.

9. Which are the essential whorls of a flower? Why are they so called?

ANS: Androecium and Gynoecium are called the essential whorls of the flower as they directly help in reproduction.

10. Describe how insects help in pollination.

ANS: Insects like bees, butterflies, etc., visit a flower to suck nectar from it. When the insect sits on the petals of the flower, the mature pollen grains get dusted on its body. When this insect visits another flower, these pollen grains are transferred to the stigma of that flower.

11.What happens to the following parts of a flower after fertilisation. – ovary, ovule, sepals, zygote, ovary wall.

ANS:

i. Ovary becomes the fruit.
ii. Ovule becomes the seed.
iii. Zygote becomes the embryo or baby plant.
iv. Ovary wall becomes the fruit wall.
v. Sepals usually wither away and falls off.

12.What are the two kinds of fruits? Describe them.

ANS:

i. True fruit: It is the fruit that is formed from the ovary of the flower. Example- Mango.
ii. False fruit: It is the fruit that is formed from any other part of the flower, but not the ovary. Example- Apple.

G. DIFFERENTIATE BETWEEN THE FOLLOWING:

1.Calyx and corolla.

CALYX	COROLLA
1.It consists of sepals.	**1.It consists of petals.**

2. Sepals are green in colour.	**2.Petals are coloured or white.**
3.Sepal helps in photosynthesis.	**3.Petals helps to attract insects for pollination.**

2. Epigeal and hypogeal germination.

EPIGEAL GERMINATION	HYPOGEAL GERMINATION
1.Cotyledons are pushed above the ground.	**1.Cotyledons remain below the ground.**
2.Hypocotyl elongates first.	**2.Epicotyl elongates first.**
3.Occurs in bean seed.	**3.Occurs in maize grain.**

3.Radicle and plumule.

RADICLE	PLUMULE
1.Root system.	**1.Shoot system.**
2.Moves along with gravity.	**2.Moves against the gravity.**

4.Androecium and gynoecium.

ANDROECIUM	GYNOECIUM
1.Male reproductive whorl of the flower.	**1.Innermost whorl of the flower.**
2.It consists of stamens.	**2.Consists of carpel.**
3.Each stamen has long filament and sac-like anther.	**3.Carpel fuse together to form pistil or gynoecium.**
4.Anther consist of pollen grain.	**4.It has three parts- stigma, style and ovary.**

5.Simple leaf and compound leaf.

SIMPLE LEAF	COMPOUND LEAF
1.It consist of a single lamina.	**1.It consists of several leaflets.**
2.Bud is usually present at the leaf axil.	**2.Bud is not present at the axil of the leaflets.**
3.Example- Mango, Peepal, Guava.	**3.Example- Neem, Rose, Tamarind.**

6.Experimental setup and control setup.

EXPERIMENTAL SETUP	CONTROL SETUP
1.All conditions are normal.	**1.Condition under study is missing.**
2.Results are calculated.	**2.Used to compare the results.**

7.Reticulate and parallel venation.

RETICULATE VENATION	PARALLEL VENATION
1.It forms a network on the surface of the lamina by the continuous branching of the midrib and the lateral branches.	**1.In this, veins are arranged in straight lines on the lamina. The lateral veinlets lie parallel to each other.**
2.Example- Mango.	**2.Example- Maize.**

8.Bisexual flower and unisexual flower.

BISEXUAL FLOWER	UNISEXUAL FLOWER
1.It is the flower in which both stamen and carpel are present.	**1.It has either the stamen or carpel.**
2.It is also called a hermaphrodite.	**2.Flower having only stamens is a male flower. Similarly, flower having only carpels is a female flower.**

3.Example- *Hibiscus*	**3.Example- Gourd**

9.*Rafflesia* and *Bignonia.*

RAFFLESIA	***BIGNONIA***
1.This is pollinated by elephants.	**2.This is pollinated by birds.**

10.Self pollination and cross pollination.

SELF POLLINATION	**CROSS POLLINATION**
1.It does not depend on pollinating agents.	**1.It depends on pollinating agents.**
2.Hypocotyl elongates first.	**2.Epicotyl elongates first.**

H. DEFINE THE FOLLOWING TERMS:

1.Pollination- **The process by which pollen grains transfer from anther to stigma of the same or different flower is called pollination.**

2.Complete flower: **A flower which has all the four floral whorls is called complete flower.**

3.Phyllotaxy: **The arrangement of leaves on the stem or branches is called phyllotaxy.**

4.Transpiration: **The process of loss of water in the form of water vapour through the stomata of the leaves is called transpiration.**

5.Petiole: **The short stalk connecting the leaf base with the leaf blade is called the petiole.**

6.Axil: **The angle between the stalk of the leaf and the stem is called axil.**

7.Dispersal: **The phenomenon of spreading of fruit and seed by agents like wind, water and animals is called dispersal.**

I. STATE THE FUNCTION OF EACH OF THE FOLLOWING PARTS:

1.Receptacle of flower: **It holds all the four floral whorls of the flower.**

2.Thorns of lemon plant: **Protect the plants from grazing animals and also check the rate of transpiration.**

3.Radicle: **Root system of the plant.**

4.Pedicel: **It is the stalk of the flower which is attached to the plant.**

5.Seed coat: **It protects the inner part of the seed.**

J. FIND THE ODD ONE OUT FROM THE FOLLOWING. GIVE REASONS FOR YOUR CHOICE:

1. Style, stigma, filament, ovary.

ANS: Filament.

i. It is the part of stamens.

ii. Rest are part of pistil.

2. Salvia, sweet pea, sunflower, maize.

ANS: Maize.

i. **Maize is wind pollinated.**

ii. **Rest are pollinated by insects.**

3. *Mucor,* mangrove, *Volvox.*

ANS: Mangrove.

i. **Mangrove is performing viviparous germination.**

ii. **Rest are doing parthenogenesis.**

4. Brinjal, tomato, chilly, lady's finger.

ANS: Lady's finger.

i. **In lady's finger, sepal falls off.**

ii. **In rest of them the sepals don't fall.**

5. Mango, banyan, paddy, pea.

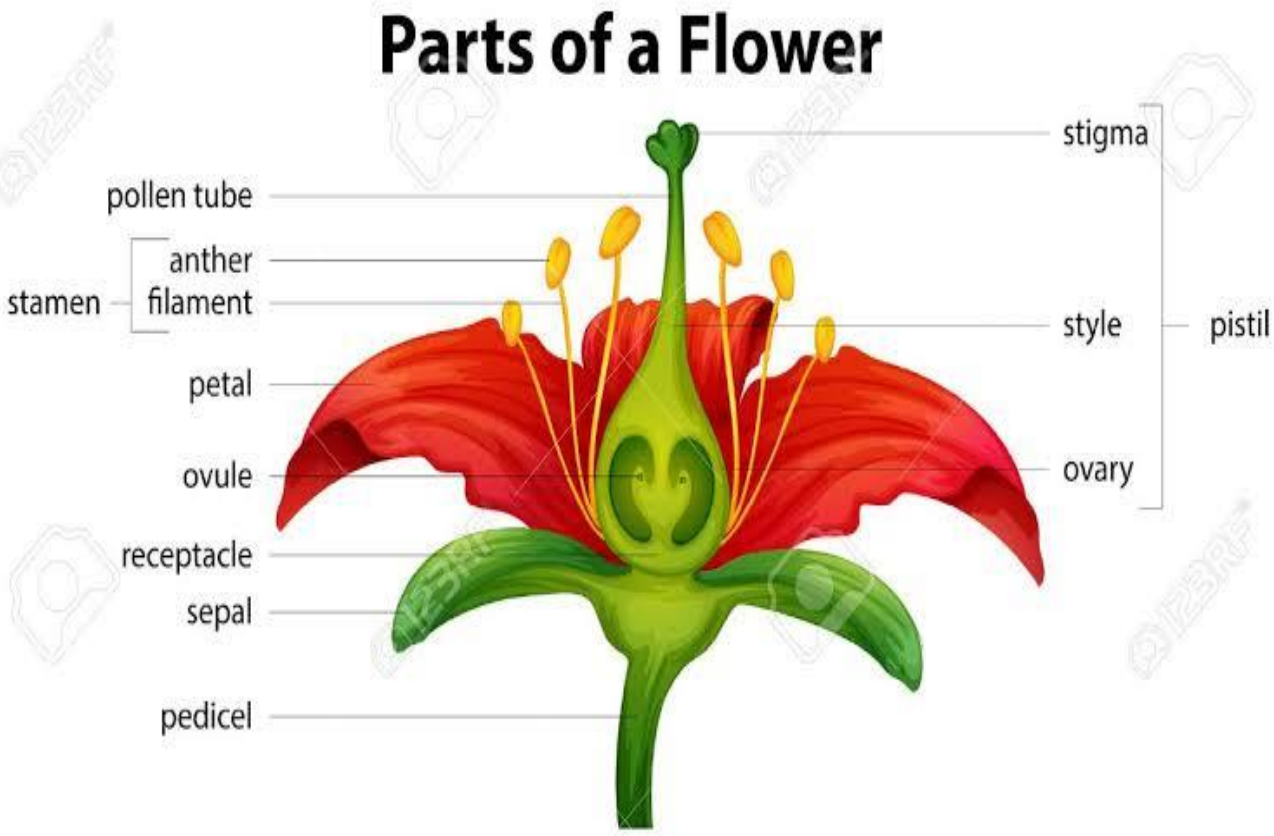
ANS: Paddy.

i. **Paddy has parallel venation.**

ii. **Rest have Reticulate venation.**

K. DRAW AND LABEL THE DIAGRAMS OF:

1. Complete flower.



2.A true fruit.