2. PLANTS: STRUCTURE AND FUNCTION

Q 1) Fill in the blanks.

1. ..... arise from the nodes on a stem.

Ans. Leaves

2. Dicotyledonous plants have ..... root.

Ans. tap

3. ..... protects the root-tip from injuries.

Ans. Root cap

4. In the bud condition the petals are covered by leaf-like parts called ..... .

Ans. sepals

5. The portion of the leaf attached to the stem is called the .....

Ans. leaf-base

6. The part of the stem between two nodes is called a ..... .

Ans. internodes

Q 2) Give examples of three plants that have.

a. Spiny fruits

b. Spiny stem

c. Red flowers

d. Yellow flowers

e. Leaves which close at night

f. Single-seeded fruits

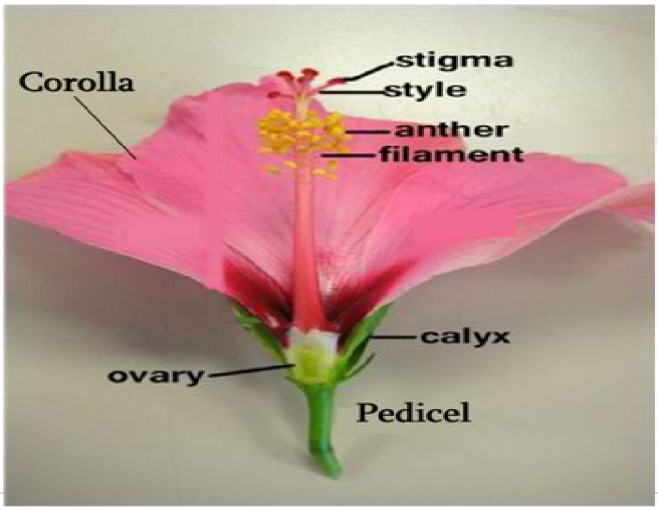
g. Many-seeded fruits

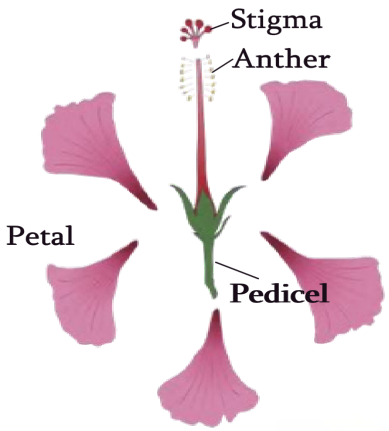
Ans.

Plant	Examples		
a. Spiny fruits	1. Castor	2. Jack fruit	3. Dhatura
b. Spiny stem	1.Silk floss trees	2. Silk cotton trees	3. Cactus
c. Red flowers	1. Flame of the forest	2. Hibiscus	3. Erythrina
d. Yellow flowers	1. Yellow Canna	2. Golden shower tree	3. Golden trumpet tree
e. Leaves which close at night	1. Amla	2. Rain tree	3. Gulmohur
f. Single-seeded fruits	1. Berries	2. Mango	3. Cashew
g. Many-seeded fruits	1. Guava	2. Water-Melon	3. Jack fruit

Q 3) Observe any one flowers, and its various parts and describes it in your own words.

Ans.





1) Pedicel: Flower may have long or short stalk called pedicel. One end is attached to the stem.

2) Receptacle: The other end of the pedicel is expanded and swollen. This is called a receptacle.

3) Calyx: In bud condition the petals are covered by leaf-like parts called sepals which are green in colour and they form the calyx.

4) Corolla: Petals make the corolla. Petals may be coloured or white.

5) Androecium: This is the male reproductive part of the flower which is made up of Stamens. Each stamen is made up of anther and filament.

6) Gynoecium: This is the female reproductive part of the flower which is made up of carpels. Each carpel consists of stigma, style and ovary.

Q 4) Write the following statements which are true or false. If false correct and rewrite them.

1. Thread-like or fibre-like roots arising from the stem are called tap root.

Ans. False. (Thread-like or fibre-like roots arising from the stem are called fibrous roots)

2. Bud and nodes are parts of stem.

Ans . True.

3. The peepal leaf-lade has parallel venation and the maize leaf-blade has reticulate venation.

Ans. False. (The peepal leaf-lade has reticulate venation and the maize leaf-blade has parallel venation.)

4. Leaves with undivided leaf blade and a single mid-rib are called compound leaves.

Ans. False. (Leaves with undivided leaf blade and a single mid-rib are called simple leaves.)

5. Coconut tree is weak and very short.

Ans. False. (Coconut tree is Strong and very tall.)

Q 5) Certain properties are mentioned below. Find a leaf corresponding to each property and describe those plants.

Leaves with smooth surface, leaves with rough surface, fleshy leaf, spines on leaf.

1. Leaves with smooth surface: Banana leaf

Ans. The banana plant has the largest herbaceous flowering plant. Banana plant has smooth leaves which are used as feeding plate in many states of India. Each pseudostem normally produces a single inflorescence, also known as the 'banana heart', locally known as kelphul. Banana grown from a kelphul. It grows

from a structure known as corm. It looks like a tall and sturdy tree but its trunk is actually a 'false stem' or pseudostem. The leaves of banana plants are composed of a petiole and a lamina. The base of the petiole widens to form a sheath; the tightly packed sheaths make up the pseudostem, which supports the plant.

2. Leaves with rough surface: Parijataka leaf (Night flowering jasmine)

Ans. As in English Parijataka tree is called 'tree of sorrow' because the flowers cannot sustain the sunlight and dry up soon with daybreak. Parijataka tree is rough leaves. It is dwarf tree growing to about 10 metres that bears red peduncles with beautiful white flowers. Parijataka flowers Bloom at night as well as in the morning one can notice carpet of flowers under the tree. Many Homeopathic and Ayurvedic drugs are prepared from rough leaves of this tree. In Indian mythological literature are many mythical tales about this tree.

3. Fleshy leaf: Eicchornia leaf (Water hyacinth)

Ans. The leave of Eicchornia is fleshy. The stem of the plant is also green as well as swollen. This leave grows in water as a submerged plant. It bears bluish violet flowers throughout the year. The plant grows rapidly, needs to be control. Otherwise it causes depletes the oxygen in the water body and eutrophication causing the death of fish. Eicchorinia affects environment of water bodies and biodiversity.

4. Spines on leaf: Pandanus leaf (Kevda)

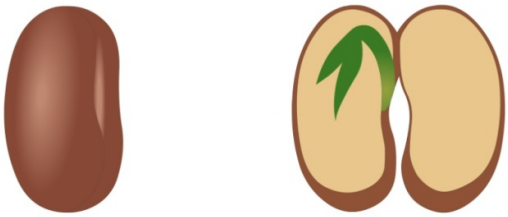
Ans: The leaf lamina of pandanus bears spines. The pandanus is also known as Kevda. These leaves are fragrant and plant of kevda grows to about 1 metre length. The stem is medium size and strong. The leaves form a crown like structure at the top of

the trees. Male and female flower is borne on separate plants. They are used for decorating.

Q 6) Explain the following images in your own words.

A

B



Ans. 1) Figure 'A' is monocotyledonus seed. It is grain of maize. Figure 'B' is Dicotyledonous seed. It is a bean seed.

2) Each figure show entire seed and a longitudinal section.

3) In figure 'A' the plumule and radicle is seen inside the covering surrounded by starchy substance. There is a single cotyledon.

4) In figure 'B' the plumule and radicle are seen on the upper side of cotyledon. There are two cotyledons.

Q 7) What are the similarities and differences between?

1. Jowar and Moong

Ans. Similarities: Both are food stuffs.

Jowar	Moong
1. Jowar is a monocotyledonous plant.	1. Moong is a dicotyledonous plant.
2. Jowar grain consist of carbohydrates.	2. Moong seed consisting of proteins.
3. Jowar seed is single cotyledon.	3. Moong seed is two cotyledons.
4. Jowar grains are seen in cobs.	4. Moong seeds are present in legumes.

2. Onion and Coriander

Ans. Similarities: Both are food stuffs. They are used as supplementary in cooking, consumed in the form of salads and also for garnishing.

Onion	Coriander
1. Onion is a monocotyledonous plant.	1. Coriander is dicotyledonous plant.
2. The edible onion is actually a modified leaf.	2. Coriander is leaves.
3. Onion is grown from seed or its bulb.	3. Coriander is grown from its seeds.

3. Leaves of banana and mango

Ans. Similarities: Both the leaves have importance religious and sacred.

Leaves of banana	Leaves of mango
1.Banana is a monocotyledonous plant	1. Mango is a dicotyledonous plant.
2. Banana leaf is parallel venation.	2. Mango leaf is reticulate venation.

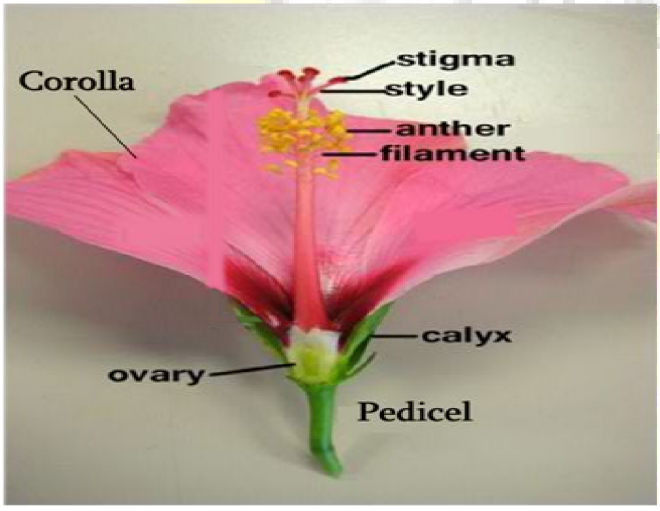
4. Coconut tree and jowar stalk plant:

Ans. Similarities: Both are monocotyledonous plants and yield food stuffs.

Coconut tree	Jowar stalk plant
1. Coconut tree is very tall and strong.	1. Jowar stalk plant is weak and short.
2. Coconut tree has adventitious roots.	2. Jowar has adventitious and stilt roots for additional support.
3. Coconut plant is perennial.	3. Jowar plant dies soon after the cob has grown.

Q 8) Observes any one flower and its various parts and describes it in your own words.

Ans-



Let choose the Hibiscus flower.

1) Hibiscus flower has pedicel. 2) All the whorls are arrange on the thalamus.

3) In this four important floral whorls are present clearly. These are:

a) Calyx: Calyx has five sepals this part is green in colour.

b) Corolla: Corolla is made up of five petals which are bright red in colour and big. The petals are free from each other.

c) Androecium: This part is a male reproductive part of the flower. This is made up of stamen looks like a long tube. The ends of these tube anthers are seen and attached to this tube by tiny filaments. On the anthers Pollen grains are seen. Some of the pollen grains stuck up in the hands.

d) Gynoecium: This is the female reproductive part of the flower which is made up of carpels. At the end of the flower, near thalamus the gynoecium is seen. Each carpel consists of stigma, style and ovary. After taking the vertical section of the flower by a blade, the ovules are seen inside the ovary. Thus the gynoecium is made up of five carpels.

Q 9) Answer the following questions.

1. Describe the functions of various parts of a plant.

Ans. 1) Various parts of the plant are as follows: Root, stem, leaves, flower and fruit.

2) Functions of the roots: a) Supporting and anchoring the plant b) absorption of minerals and water c) Some roots show some modifications for performing additional functions. e. g. runners-help in vegetative propagation, stilt-roots-give additional support, Aerial roots absorb moisture from air, breathing roots (pneumatophores)- breathe for plants, some underground roots store food materials etc.

3) Functions of the stems: a) To hold all the branches of the plant b) To perform function of photosynthesis as in cactus c) Modified stems perform functions such as reproduction, food storage, support etc. d) To transport water absorbed by the roots to all the parts of a plant and to transport food prepared by the leaves to various part of the plant.

4) Functions of the leaves: a) Production of food by performing photosynthesis b) Modified leaves perform additional functions such as support, reproduction, food storage, etc. c) Transpiration means the process of giving out excess of water.

5) Functions of the flowers: flowers attracts the insects by their Fluorescent colour, flowers contents some amount of honey, through insects pollination occurs and helps the Reproduction.

6) Functions of the fruits: fruits are delicious and testy food material. Fruits and seeds are main food of some animals and birds. Seeds are spreads through animal and birds.

2. What are the different parts of stem?

Ans. 1) The part of the stem between two successive nodes is called internodes. 2) There are nodes on the stem from where the leaves come out. 3) The tip that is the apical end of the stem is called a bud. 4) There is also a bud in the axils of the stem from where the branches arise.

3. What are the different types of leaves according to their arrangement of leaves on the stem and their shapes?

Ans. According to the arrangement of leaves on the stem they are alternate, whorled, spiral, opposite etc. According to their shape, leaves are palmate, lanceolate, rounded linear, etc.

4. What are the different types of roots?

Ans. 1) Fibrous roots and tap root are the two main types of roots. 2) Monocotyledonous plants have fibrous roots as well as dicotyledonous plants have tap roots. 3) In some plants the roots are modified to perform additional function. These roots are runners, breathing roots, aerial roots, stilt- roots, 4) some roots called adventitious roots grow from the stem just above the soil.

5. Describe the structure of tap root.

Ans. 1) Tap root is the main root of the dicotyledonous plants that grows from the radicle. 2) Monocotyledonous plants have fibrous roots and dicotyledonous plants have tap roots 3) some roots called adventitious roots grow from the stem just above the soil. 4) In some plants the roots are modified to perform additional functions. These roots are Stilt-roots, runners, aerial roots, breathing roots etc.

Q 10) Find the plant parts.

r	b	u	d	x	s	r	f
o	w	p	y	e	t	a	l
o	l	l	d	n	e	d	o
t	a	o	i	l	m	i	w
c	n	e	t	a	l	c	e
a	v	o	v	u	m	l	r
p	e	t	a	l	s	e	o
r	o	o	t	h	a	i	r

Ans.

1. root	2. bud	3. calyx	4. vein
5. stem	6. radicle	7. flower	8. petals
9. root hair	10. root cap	11.Leaf	12. petal

Q 11) Use your brain power.

1. What would have happened if plants like tamarind, banyan and mango had fibrous roots?

Ans. Tamarind and mango plants are grand canopy of leaves and huge trees. These plants roots should be strong enough to support these trees. If they had fibrous roots, the trees will be uprooted and fallen down.

2. Of what use to a plant are the insects fitting about around its flowers?

Ans. Insect helps in pollination of the flowers. They transfer the pollen grains from one flower to another.

3. What will happen if the root-tip is injured?

Ans. The growth of the plant will be stunted, initially the tree will try to survive but injured root may not absorb water and minerals from the soil. The support of the tree will also become insufficient, tree will become weak and eventually die.

4. Which types of roots do the fenugreek, spinach and onion plants have?

Ans. Fenugreek has tap root but fenugreek does not traverse deep down in the soil. Spinach also has tap root and it bears many secondary roots. Some of these are seen growing horizontally in the soil. Onion has fibrous roots. They emerge from disc shaped structure which is a modified stem.