

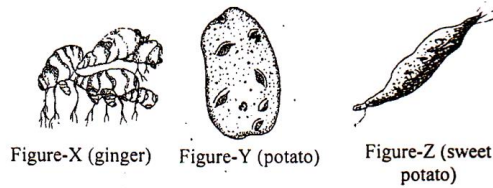


Class Seven

Chapter Three

External Morphology of Plants

1.

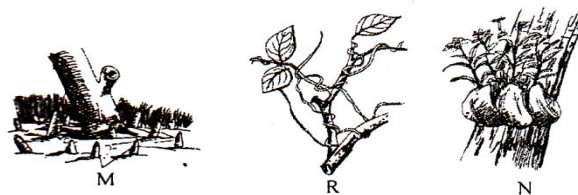


- a. What is a bulbil?
- b. How does reproduction occur through leaves in Bryophyllum (pathorkuchi)?
- c. Explain the use of-X.
- d. Compare and discuss the characteristics of Y and Z.

Answer to the Question no.1

- a. **Bulbils:** In some climbers auxiliary buds do not develop as branches but store food and become rounded ball like structure which are called bulbils.
- b. Buds grow from the margins of Bryophyllum(Pathorkuchi) leaves. Gradually these buds develop roots and ultimately when detached from the leaf, become independent plants.
- c. Figure-X is a ginger. This one is rhizome type modified stem. They grow parallel to soil surface or erect and store foods. We take as food the soften stems of ginger. Ginger is used as ' a very important spice/masala in different types of cooking. Ginger is used to prepare different foods. Its medicinal quality is not less. Ginger juice is helpful for simple coughing. So the importance of ginger in our everyday cooking food is unbound.
- d. Figure Y is a potato, a tuber. It is an underground modified stem; figure- Z is a sweet potato, a tubercular root. It is a modified adventitious root, potato means tubers bear nodes, inter nodes, scale leaves and auxiliary buds. Cavities at the leaf axils of scale leaves are called `eyes'. In favorable conditions axillary buds grow from `eyes' and give rise to new plants. Tubers are round and swollen due to storage of food. Tubercular root of sweet potato grows from nodes near the soil level and becomes irregularly swollen for storage of and attain an indefinite shape.

2.



- a. What is on offset?
- b. Why pitcher plant is called insect trap?
- c. Explain the necessity of the part M in the first diagram .
- d. Compare the plants R and N.

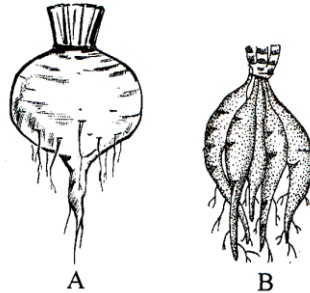
Answer to the question no. 2

- a. **Offset:** Inter nodes of some aquatic plants like Topapana and Kochuripana are thick and short, so the stems look dwarf. These are called offset.
- b. Pitcher plant is a climber and dodder is an aquatic plant whose leaves are modified to pitcher or bags. When insects enter inside the pitcher, the lid of the pitcher is closed and the plants absorb juice from the insect body.
- c. In figure M the pointed part is a respiratory roots or pneumatophor of the trees Sundori and Goran. These kind of modified rooted plants are found in the forest of costal region. These roots have small pores are as following: Branch roots from the main root come up from the saline and muddy soil as for lack of enough oxygen in the coastal region as they have small pores on them, so they easily can exchange the element of gas



- d. Figure-R is a stem tendril. This is one kind of aerial modified stem. Figure-N is a bulbils. This one is also an aerial modified stem. The comparative discussion between R and N are as below-
- Stem tendril:** Passion flower, Harjora etc. climbers develop thread like thin and spiral long structures which are called stem tendrils.
- Bulbils:** In some climbers axiliary buds do not develop as branches but store food and become rounded ball like structure which are called bulbils.

3.



- In how many types the main root can be modify?
- What is the tubercular root?
- Define the differences between figure- A and figure- B.
- In figure- B the root is modified for storage of food, write your opinion.

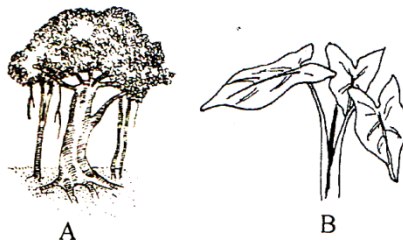
Answer to the Question no. 3

- The main roots are modified into four categories.
- The main root swells irregularly due to storage of food. They have no particular shape. This shape of the main root is known as tubercular root. Such as mirabilis sondhya maloti).
- Figure — A is a conical root and figure — B is a fasciculated root. Here are the difference between them ,

Figure-A (conical root)	Figure-B (fasciculate root)
1. Modification of main root	1.Modification of adventitious root
2. Grown from main root	2. Grown from stem rather than main root
3. For storage of food the main root becomes thick and juicy	Due to storage of food a bunch of adventitious roots swells irregularly. As like tubers

d) Figure- B is a fasciculated root. This kind of root are found in the trees of Sotomuli and Dahlia. It is like root tubers that swells irregularly due to storage of food. But when the roots form a fascicle or bunch and all the roots of the bunch swell up due to storage of food, it is called fasciculated root. This adventitious modification of root is for storage of food.

4.



- What is a scale leaf?
- What does mean by the parasitic roots of Dodder?
- Describe about the figure-A
- Discuss about the importance of figure- A and figure- B on the life of plants.

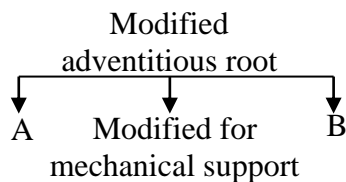
Answer to the Question no. 4

- Scale leaves: Sometimes underground stems develop scale like leaves such as potato, ginger, turmeric etc. These are scale leaves.
- Parasitic plants do not have chlorophyll. So they push their special type of roots inside the body of the host plant in searching of food. It is called sucking or parasitic roots.



- c. Figure- A is a prop root. This kind of root can be found in the tree of banyan. Descriptions of prop roots are as below-These types of roots grow from the stem of the branches and come down and enter into the soil. Finally they become so thick that it looks like a pillar. The main functions of this root are providing mechanical support for the excess weight of branches and for the hardness of the tree.
- d. Figure — A is a prop root; a modified adventitious root. Adventitious roots are modified for performing especial functions. It is modified mainly for three reasons, such as storage of food, mechanical support, and physiological activities. Figure-A is a prop root of banyan tree which bear the excess weight of branches of the tree that means these root have grown to provide mechanical support.
- Figure — B is a stolon which can be found in the arum tree. These are special type of runners. From the base of arum grow some horizontal long branches. Nodes of the branches give rise to some roots which attach with the soil and the rest portion of the branch is a bit erect. So figure- A, and figure- B has an unlimited importance on various living function of plants.

5.



- Why the fusiform roots become thick and juicy?
- Write about the tubercular roots of sweet potato?
- Describe about the roots of type-A
- What is about the importance of root type-B for plants

Answer to the question no. 5

- For storage of food
- Root tuber of sweet potato grows from nodes near the soil level and becomes irregularly swollen for storage of food and attain in indefinite shape.
- Describe about modified adventitious roots that are modified for storage of food
- Discuss the importance of modified roots which are modified for physiological activities.

Short answered questions:

Ques-1: Why are potatoes not roots?

Ans: Roots does not have nodes, inter nodes, scale leaves and auxiliary buds. But potatoes have all of them. Cavities at the leaf axils of scale loaves are called eyes. In favourable aonditions axillary buds grow from eyes and give rise to new plants. Potatoes are the example of tuder. So tubers are round and swollen due to storage of food but its not a root.

Ques-2: Whether the body of a cactus is stem or leaf explain.

Ans: The body of cactus is not a leaf it is called phylloclade. They are flat and green like leaves and it can manufacture food. Leaves of this stem are modified to spines and are used for self defense.

Ques-3: Mention the reasons why leaves are modified.

Ans: To perform special functions leaves clanged their normal structure. Like leaf tendrils, storage of food, reproductive leaves, self defense etc.

Ques-4: Mention the special functions of stems.

Ans: Special function of stems are- to survive from adverse condition, storage of food, vegetative propagation, synthesis food, self defense, climbing etc.

Ques-5: What are the reasons of root modifications?

Ans: Root is modified mainly for three reason. Such as storage of food, mechanical support and physillogical activities

Multiple Choice Questions:

- In which plant Moniliform roots are found?**
 - Dahlia
 - Mango, ginger
 - Sweet Potato
 - Bitter Gourd✓
- Characteristics of Rhizome are-**
 - definite nodes and inter nodes



- ii) nodes and internodes are compressed
- ii) stay in horizontal position under the soil

Which one of the following is correct?

- a) i and ii
 - b) i and iii ✓
 - c) ii and iii
 - d) i, ii and iii
- 3. How many kinds of main root sare there basis of their shapes for storage of food?**
- a) 2
 - b) 3
 - c) 4 ✓
 - d) 5
- 4. Which one is a tubercular root?**
- a) Turnip
 - b) Mirabilis (Sondhya maloti) ✓
 - c) Carrot
 - d) Radish
- 5. What type of root is acarrot?**
- a) Modified main root ✓
 - b) Modified adventitious root
 - c) Modified tubercular root
 - d) Modified nodulose root
- 6. Which one of the following swells irregularly?**
- a) Radish
 - b) Mirabilis sandhya maloti ✓
 - c) chrrrot
 - d) turnip
- 7. Which one of the following is the characteristic of fusiform foot?**
- a) The upper part is thick and lower part is gradually tapering.
 - b) The middle portion of this root is thick and two ends are gradually tapering ✓
 - c) Rounded
 - d) Irregular shaped
- 8. Which one of the followings upper portion of the root becomes rounded due to storage of food and the lower part suddenly becomes thin**
- a) Radish
 - b) Carrot
 - c) Turnip ✓
 - d) Mirabilis (sondhya maloti)
- 9. The root of mirabilis are–**
- i) particular size and shaped
 - ii) main root is irregularly thick
 - ii) tubercular
- Which one of the following is correct?**
- a) i and ii
 - b) i and iii
 - c) ii and iii ✓
 - d) i, ii and iii
- 10. The Dahlia, Keya and Sundori all roots are modefied for the function of–**
- i) storage of food
 - ii) mechanical support
 - iii) physical activities
- Which one of the following is correct?**
- a) i and ii
 - b) i and iii
 - c) ii and iii
 - d) i, ii and iii ✓
- 11. How many types of functions are performed by modified adventitious root:**
- a) 3 ✓
 - b) 4
 - c) 5
 - d) 6
- 12. Which one is the root following is a tubercular root**
- a) Sweet potato ✓
 - b) Sotomuli
 - c) Dahlia
 - d) Mango, ginger
- 13. Which one is the root of sotomuli and dalia?**
- a) Fasciculated root ✓
 - b) Nodulose
 - c) Moniliform
 - d) Tubercular
- 14. Which one of the following is a modified adventitious root of the tree banyan?**
- a) Prop roots ✓
 - b) stilt roots
 - c) climbing root
 - d) aerial roots
- 15. Which one's root is a climbing root of the following?**
- a) Banyan
 - b) orchid
 - c) betel vine ✓
 - d) dahlia
- 16. In which of the following aerial roots can be seen?**
- a) Orchid ✓
 - b) Banyan
 - c) Betel
 - d) Dahlia
- 17. Which of the following does not contain chlorophyll?**
- a) Dodder ✓
 - b) Betel
 - c) orchid
 - d) Sweet potato
- 18. Which one of the follwing does push their special type of root inside the body of the host plant for searching food?**
- a) Banyan
 - b) Betel
 - c) Orchid
 - d) Dodder ✓



19. **What is the root of Dodder?**

- a) Aerial roots ✓
- b) Respiratory roots
- c) Still roots
- d) prop roots

20. **What type the root of sweet potatoes is?**

- a) Still roots
- b) Moniliform roots
- c) Prop roots
- d) Tubercular roots ✓

21. **What kind of roots of dodder do help to survive on host plant?**

- a) Respiratory roots
- b) parasitic/sucking roots ✓
- c) climbing roots
- d) Aerial roots

22. **Sweet potatoes–**

- i) take part in reproduction
- ii) a kind of reproductive root
- iii) a kind of parasitic/sucking root

Which one of the following is correct?

- a) i and ii ✓
- b) i and iii
- c) ii and iii
- d) i, ii and iii

23. **Prop roots–**

- i) grow from the stem of the branches
- ii) help the plant to lift up
- iii) become so thick like a pillar

Which one of the following is correct?

- a) i and ii
- b) i and iii ✓
- c) ii and iii
- d) i, ii and iii

24. **Especial roots of banyan, screw pine, helencha help the plant–**

- i) to stand erect
- ii) to float in the water
- iii) to lift up

Which one of the following is correct?

- a) i and ii ✓
- b) i and iii
- c) ii and iii
- d) i, ii and iii

Read the passage given below and answer to the questions no. 25-26

Shafiq likes to eat sweet potato very much. His teacher told him that, this root is modified for especial purpose and changed into this shape. Same thing happens in case of bitter gourd and dahlia.

25. **About what reason was talked by teacher in this stem?**

- a) Storage food ✓
- b) Carry food
- c) Mechanical support
- d) Physical activities

26. **What can be found in the trees discussed in this stem–**

- i) fasciculated roots
- ii) moniliform roots
- iii) fusiform roots

Which one of the following is correct?

- a) i and ii ✓
- b) i and iii
- c) ii and iii
- d) i, ii and iii

27. **How many kinds of stems are there based on position?**

- a) 5
- b) 4
- c) 3 ✓
- d) 2

28. **What types stem ginger is?**

- a) Tuber
- b) Rhizome ✓
- c) Corms
- d) Bulbs

29. **What type stem amor phophallus is?**

- a) Tuber
- b) Rhizomes
- c) Corms ✓
- d) Bulbs

30. **How many kinds of sub aerial modified stems are?**

- a) 1
- b) 2
- c) 3
- d) 4 ✓

31. **Which one of the following plants stem is a phylloclade?**

- a) cactus (phoni monosha) ✓
- b) wood apple
- c) lawsonia (mehendi)
- d) Moina kata

32. **Which of the plant leaves of the stem are modified to spines and helps in self defense?**

- a) Wood apple
- b) moina kata



- c) jhumkolata
33. **In which plants buds are found as stout like sharp thrones?**
a) Wood apple and harzora
b) Lawsonia (mehendi) and harzora
c) Wood apple and lawsonia (mehendi) ✓
d) Lawsonia and jhumkolota
34. **In which of the following plant runner can found?**
a) oxalis (amruli)
b) arum ✓
c) bamboo
d) chrysanthemum (chandra-mallika)
35. **What is called the cavities at the leaf axils of scale leaves in tuber?**
a) Dodder
b) Sweet potatoes ✓
c) Sundori
d) goran
36. **What is called the cavities at the leaf axils of scale leaves in tubr?**
a) Bulbils
b) buds
c) runner
d) eyes ✓
37. **Which one of the following is a type of rhizomes stem?**
a) Potatoes
b) ginger ✓
c) Onion
d) Amorphophallus
38. **What kind of modified stem can be found in arum, hydrocotyle thankuni, and eicchornia?**
a) Underground
b) Sub aerial ✓
c) Climbing
d) Aerial
39. **What is called the stems grow from the auxiliary buds of lower nodes of plants give rise to some weak stem?**
a) Stolone
b) Runner ✓
c) Offset
d) Sucker
40. **In which plant of the following runner can be found?**
a) Cynodon (Durba) plants ✓
b) Eicchornia (kocuripana)
c) Bamboo
d) Chryesthemum
41. **In the rhizomes type stem–**
i) this stem produces adventitious fibrous roots
ii) it bears clear nodes and internodes
iii) scale leaves and roots at nodes and buds at the axils of scale leaves
Which one of the following is correct?
a) i and ii
b) i and iii
c) ii and iii ✓
d) i, ii and iii
42. **which of the following plant leaves take part in reproductive activates?**
a) wild pea
b) bryophyllum (patharkuchi) ✓
c) cactus
d) aloe vera
43. **in which of the following plant leaf tendrils can be found?**
a) wild pea ✓
b) aloe vera
c) cactus
d) bryophyllum
44. **Which of the plant leaves here can be modify to jhorn?**
a) Briophyllum
b) Lemon ✓
c) Lawsonia
d) Wood apple
45. **In which plants scale leaves can be found?**
a) potatoes, lemon
b) ginger, lemon
c) Aloe vera, turmeric
d) Turmeric, potatoes ✓