

NEET- 2020- 45 Days Crash Course



Date : 29th June 2020



Chapter Name : MORPHOLOGY IN FLOWERING PLANTS



QUIZ – NEET

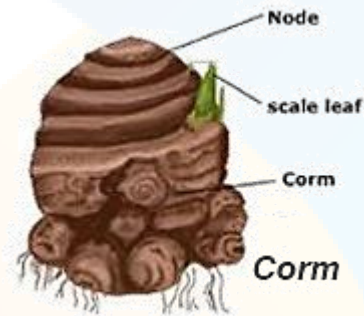
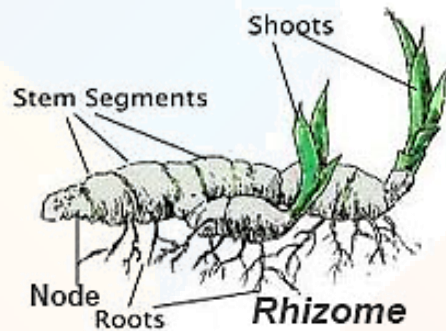
Thick unbranched roots found in corms and rhizomes of some plants are

- (A) Reproductive
- (B) Contractile
- (C) Root thorns
- (D) Stilt roots

Sol

Ans [B]

In plants like corm , rhizome the roots are underground and are connected with swollen underground stem. The contractile roots attached to them shrink and bring the storage stem downwards, e.g., Crocus, Freesia, Canna.



The factors which initiate development of respiratory roots in *Avicenna* and other mangroves are

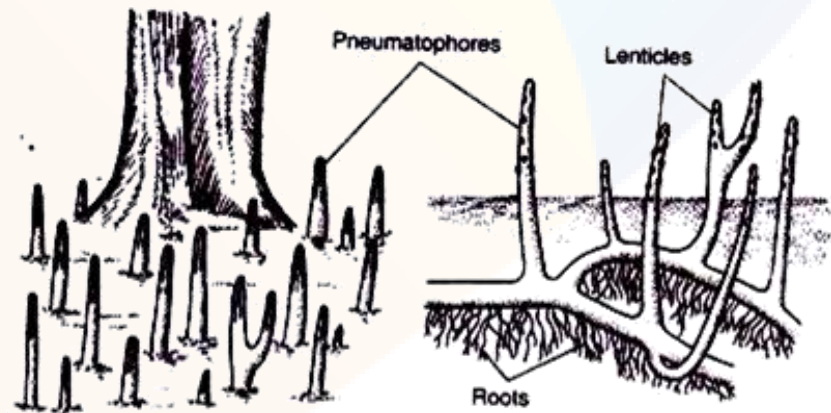
- (A) Soil is physiologically dry
- (B) Saline marshes
- (C) Poor oxygen supply
- (D) All of these

Ans [D]

Pneumatophores or respiratory roots are short, vertical and negatively geotropical roots which occur in mangrove plants. They are the aerial roots that grow vertically upwards in swampy plants like *Rhizophora* to obtain oxygen as swampy plants are constantly submerged under water. If the roots does not get oxygen they will rot and die.

Their main function is respiration hence they are also called as respiratory roots.

Respiration. Pneumatophores are aerial roots found in mangrove plants. Since these plants grow in marshy areas they use the pores on their pneumatophores for respiration. These pores are called lenticels.



Buttress or plank roots in Bombax and Ficus are metamorphosed tap roots for support.

They arise from

- (A) Base of tap root
- (B) Base of adventitious roots
- (C) Base of tap root and trunk both
- (D) Base of trunk

Sol

Ans [C]

Buttress roots are laterally compressed horizontal roots which travel along the ground for some distance and provide extra mechanical support e.g., *Ficus elastica* (Rubber tree), *Bombax* (Simbal). These roots are formed jointly by base of trunk and tap root.



Buttress roots

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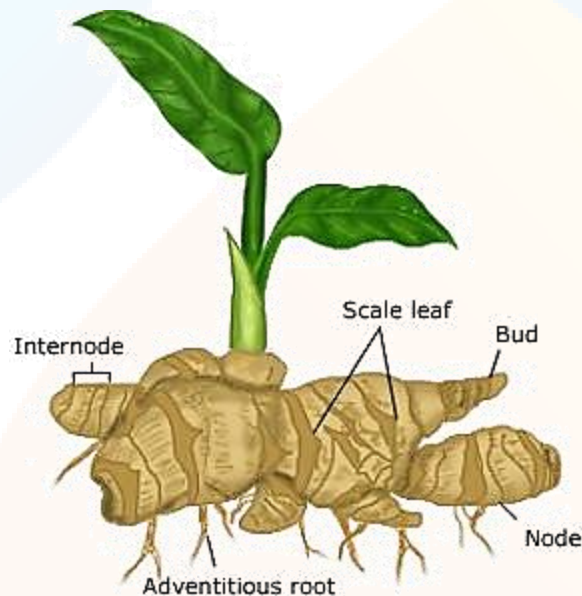
Ginger is a

- (A) Bulb
- (B) Tuber
- (C) Rhizome
- (D) Corn

Ans [C]

Rhizome is a horizontal underground plant stem capable of producing the shoot and root systems of a new plant. They are used to store starches and proteins and enable plants to perennate underground. Common examples of rhizomes include canna lilies, bearded Iris, ginger and bamboo.

Ginger is straggling rhizome that creeps horizontally in the soil. It is often branched.



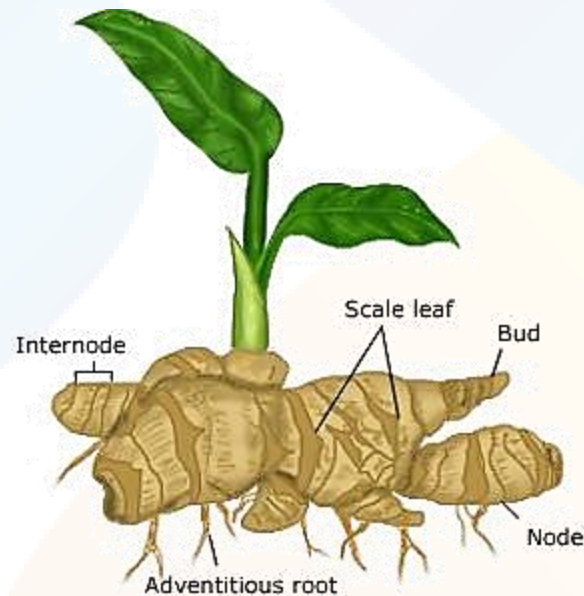
Ginger multiplies vegetatively by

- (A) Tuber
- (B) Corn
- (C) Sucker
- (D) Rhizome

Sol

Ans [D]

Regeneration of new plants from vegetative organs like roots, stem and leaves is called vegetative propagation. In ginger vegetative reproduction occurs by rhizome



In Agave (Century plant) bulbils are modified

- (A) Axillary buds
- (B) Floral buds
- (C) Adventitious buds
- (D) Thorns

Ans [B]

Modification of whole buds into swollen structures due to storage of food materials are called bulbils.

In *Lilium bulbiferum* and *Dioscorea bulbifera*, the bulbils develop in axil of leaves; in Agave, floral buds of inflorescence transform into bulbils; In Oxalis, they develop just above the swollen roots



q

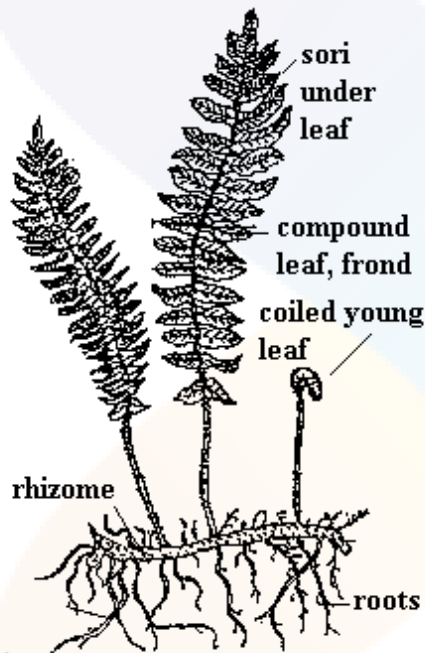
Which underground stem helps in storage of food, perennation and reproduction

- (A) Dryopteris
- (B) Gladiolus
- (C) Narcissus
- (D) All of these

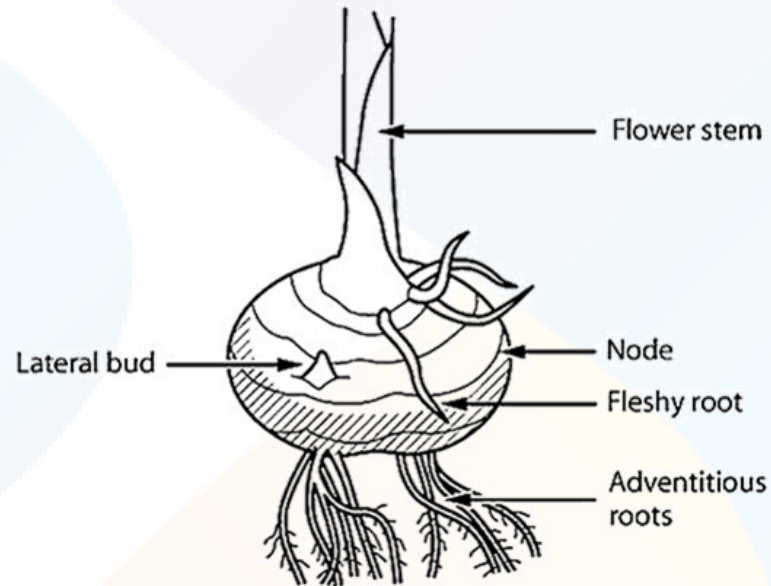
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Ans [D]

Dryopteris, Gladiolus and Narcissus are examples of underground stem.



Dryopteris



Gladiolus

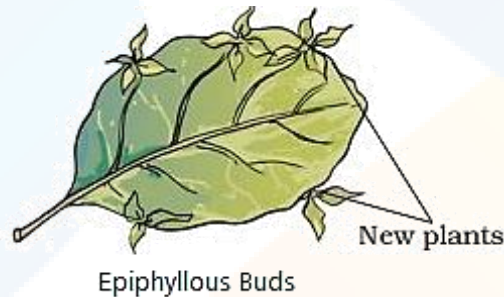
Epiphyllous buds develop from

- (A) Leaf margin
- (B) Leaf axil
- (C) Leaf base
- (D) Stipule

Sol

Ans [A]

The small buds which arise on leaf margins, they are called epiphyllous buds. They are helpful for vegetative propagation. In Bryophyllum, buds occur on the crenate margin of the leaf.



Leaf of Bryophyllum

In Gloriosa (Glory lily) the tendril is formed from

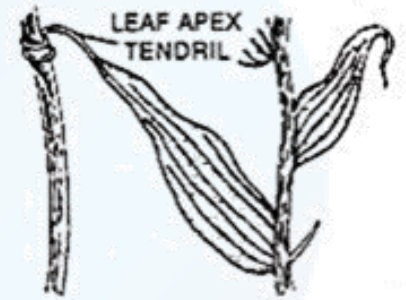
- (A) Stipule
- (B) Leaf apex
- (C) Axillary bud
- (D) Leaf

Ans [B]

In weak- stemmed plants, leaf or a part of leaf gets modified into green threadlike structures called tendrils which help in climbing around the support.

Various parts of leaf get modified into tendrils:

- (i) Entire Leaf is Modified into Tendril, e.g., *Lathyrus aphaca* (wild pea)
- (ii) Upper Leaflets Modified into Tendrils, e.g, *Pisum sativum* (pea)
- (iii) *Lathyrus odoratus* (sweet pea).
- (iv) Leaf Tip Modified into Tendril, e.g., Gloriosa (Glory lily)
- (v) Petiole Modified into Tendril, e.g., Clematis
- (vi) Stipule Modified into Tendril, e.g., Smilax (



Gloriosa. Leaf tip modified into tendril

A plant which lives for a few days is called

- (A) Annual
- (B) Perennial
- (C) Biennial
- (D) Ephemeral

Sol

Ans [D]

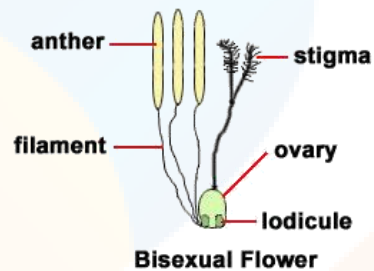
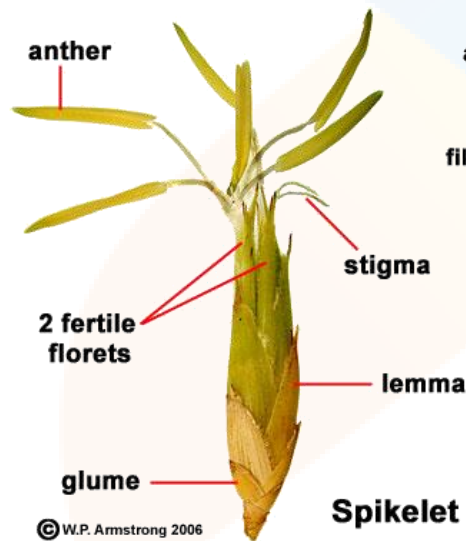
A plant which lives for a few days is called ephemeral because of a very short growing season. Such plant are found near deserts or in very cold countries. e.g., Arabidopsis species have life span of 20-28 days.

Perianth in the spikelet of jawar is represented by

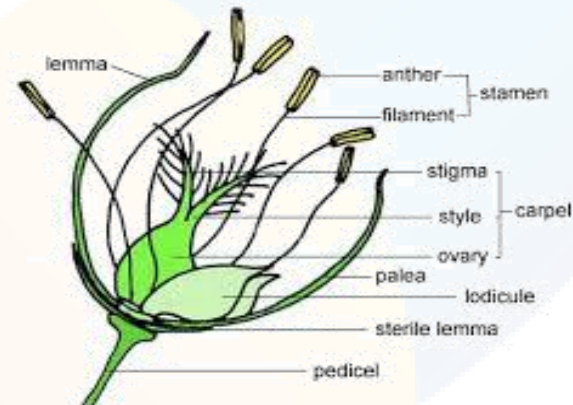
- (A) Lodicules
- (B) Sepals and petals
- (C) Glumes
- (D) Lemma and palea

Ans [A]

A spikelet consists of two (or sometimes fewer) bracts at the base, called glumes, followed by one or more florets. The perianth is reduced to two scales, called lodicules, that expand and contract to spread the lemma and palea; these are generally interpreted to be modified sepals.



Lodicules are minute scales (reduced perianth segments) that become water-filled and swell at anthesis. This forces lemma & palea bracts apart allowing anthers and stigma to extend out of florets, thus enabling cross pollination.



q

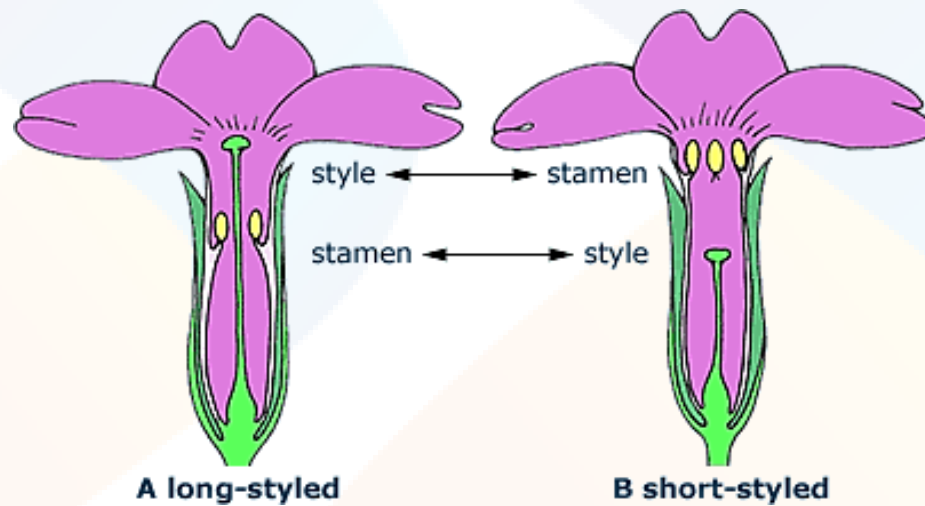
Heterostyly is show by

- (A) Primula
- (B) Mirabilis
- (C) Helianthus
- (D) China rose

Sol

Ans [A]

In heterostyly condition, stamens, style and stigma are of different heights, e.g., *Primula*, *Oxalis*, *Linum* etc.



q

Which is odd one

(A) China rose

(B) Maize

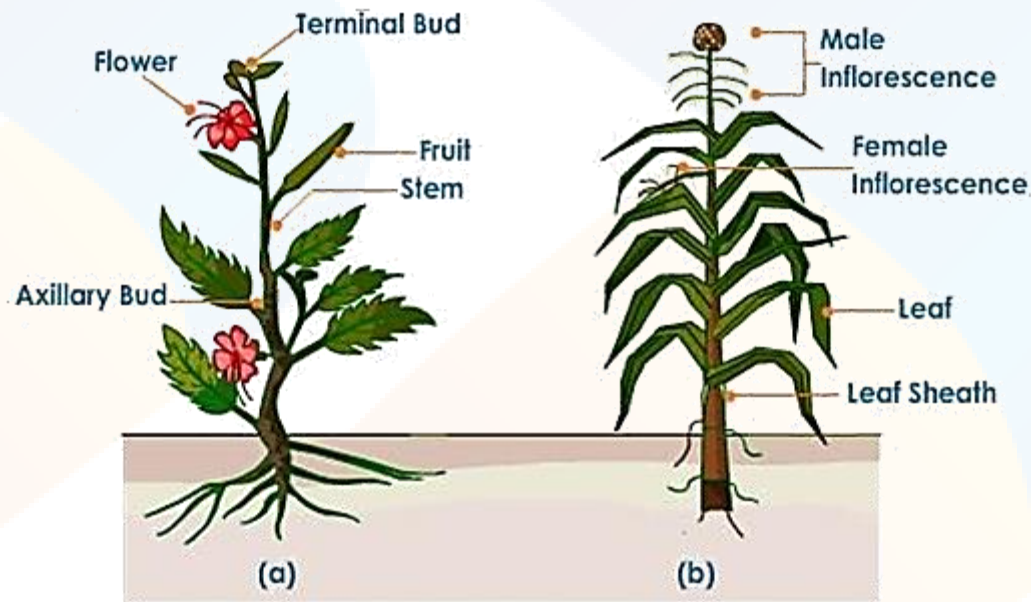
(C) Mango

(D) Sunflower

Sol

Ans [B]

Maize is a monocotyledonous plant whereas China rose, Mango and Sunflower are dicotyledonous plants.



a) A Dicot Plant (*Brassica Campestris* - Mustard)

b) A Monocot Plant (*Zea Mays* - Maize)

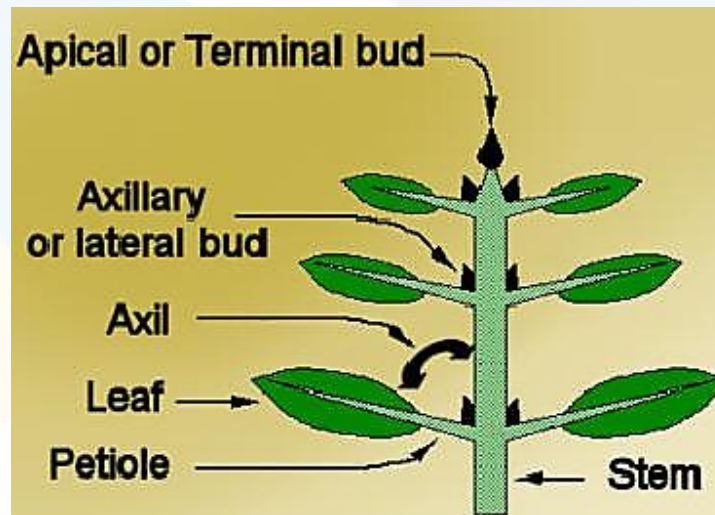
Flower and lateral branches arise from the

- (A) Lateral buds
- (B) Lenticels
- (C) Stomata
- (D) Cuticle

Sol

Ans [A]

The flower and lateral branches usually develop as a branch from a bud growing in the axil of a small leaf-like structure known as bract, such buds are known as lateral buds.



Position of apical and axillary buds

q

What name has been assigned to the genus produced by a cross between cabbage and radish

(A) Secale

(B) Bursa pastoris

(C) Lysogenicophyll

(D) Raphano brassica

Sol

Ans [D]

Raphanobrassica is an intergeneric hybrid between the genera Brassica (cabbages, etc.) and Raphanus (radish). The name comes from the combination of the genus names.



Raphanobrassica

The condition where filaments and anthers are fused throughout the entire length is

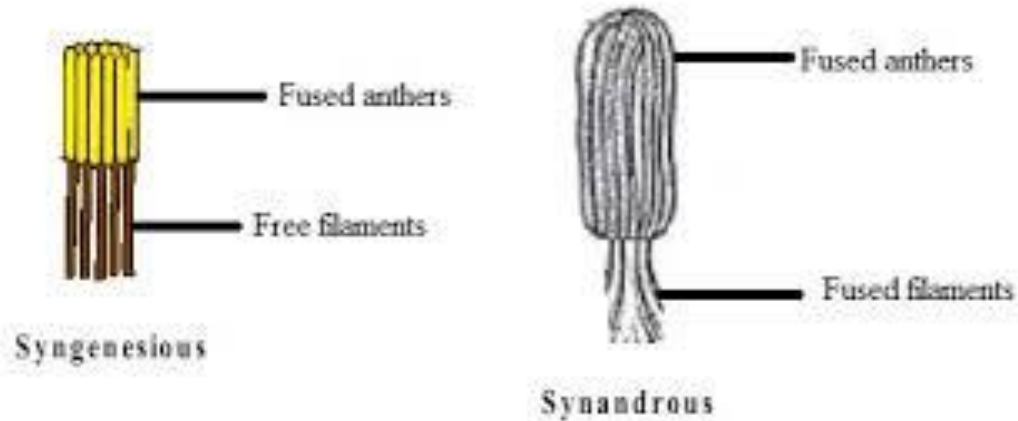
- (A) Synandrous
- (B) Gynadrous
- (C) Protandrous
- (D) Syngenesius

Sol

Ans [A]

The stamens of a flower remain free or united with each other. The condition when all stamens of a flower are free is termed polyandrous

When stamens are united throughout their whole length by filaments and anthers e.g. Cucurbitaceae.



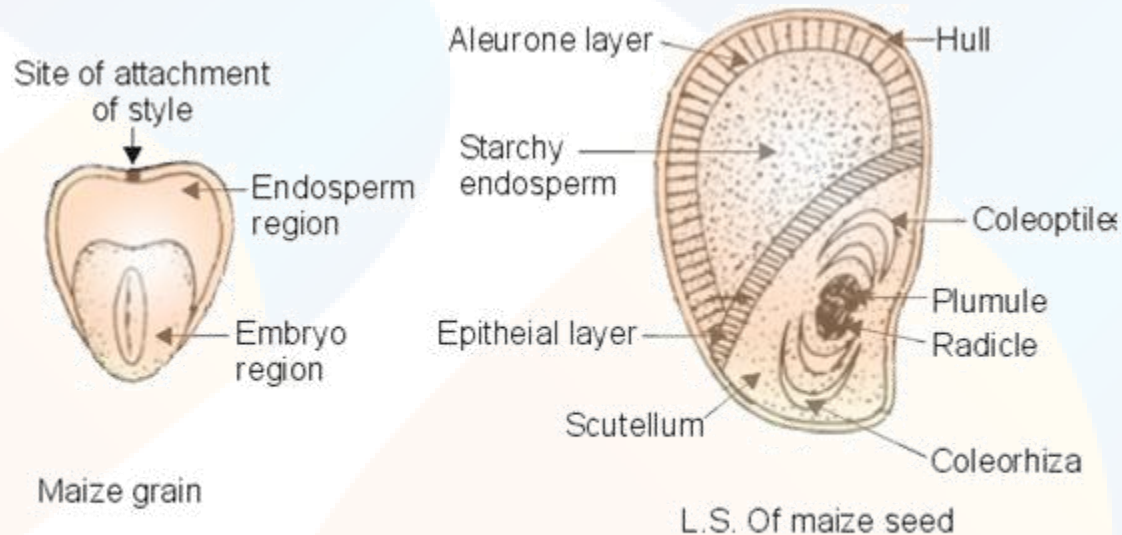
In a seed of maize, scutellum is considered as cotyledon because it

- (A) Protects the embryo
- (B) Contains food for the embryo
- (C) Absorbs food materials and supplies them to the embryo
- (D) Converts itself into a monocot leaf

Sol

Ans [C]

A shield-shaped single cotyledon is known as the scutellum is present in maize seed .It is separated form the endosperm by the epithelial layer. The embryo is embedded in the scutellum. Scutellum absorbs food materials and supplies them to the embryo



Structure of maize seed

q

Palm like fleshy adventitious roots are the feature of

- (A) Dahlia
- (B) Asparagus
- (C) Curcuma
- (D) Orchid

Sol

Ans [D]

The swollen adventitious root develop finger like out growth so as to resemble the palm of a human hand, e.g., Orchid



Branches of Palmate fleshy root

Assimilatory (Photosynthetic) roots a characteristic of

- (A) *Trapa* and *Tinospora*
- (B) *Taeniophyllum* and *Podostemon*
- (C) Both correct
- (D) None of these

Ans [C]

Assimilatory roots are green, aerial, adventitious roots which prepare food materials by photosynthesis .

Assimilatory roots are seen in plants like Trapa, Tinospora, Taeniophyllum and Podostemon
These roots serve as means of vegetative propagation

ASSIMILATORY ROOTS

IN
TRAPA,
Adventitious roots
with
chlorophyllous
tissue capable of
photosynthesis.



Assimilatory roots of Tinospora

Root bears

- (A) Nodes only
- (B) Internodes only
- (C) Both nodes and internodes
- (D) None of these

Sol

Ans [D]

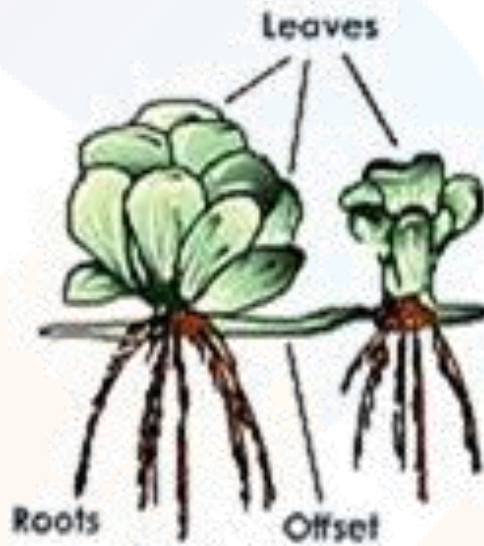
Roots do not bear nodes and internodes

Root pockets act as balancers and found in

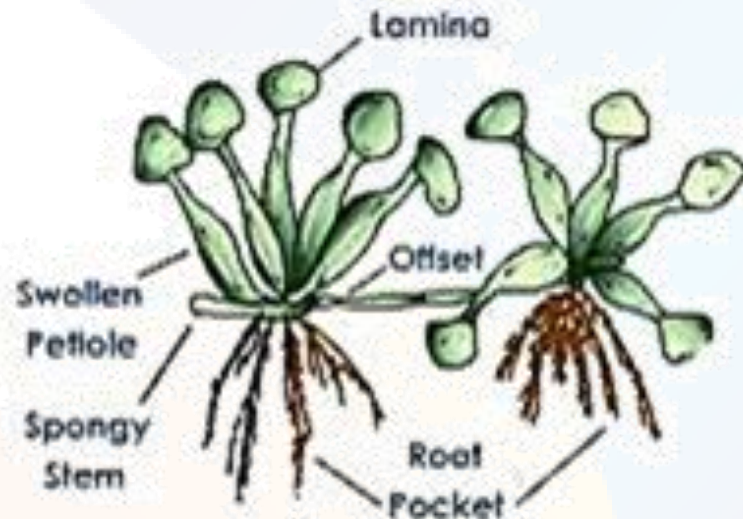
- (A) Hydrophytes
- (B) Free floating hydrophytes
- (C) Fixed floating hydrophytes
- (D) Submerged hydrophytes

Ans [B]

Root pocket : A modified root cap found in floating aquatic plants for balancing, which cannot be regenerated, e.g., Pistia, Eichhornia, Lemna.



Pistia



Eichhornia

The primary function of root is

- (A) Absorption
- (B) Anchorage
- (C) Food storage
- (D) All

Sol

Ans [D]

The first root that comes from a plant is called the radicle.

A root's four major functions are

- 1) absorption of water and inorganic nutrients,
- 2) anchoring of the plant body to the ground, and supporting it,
- 3) storage of food and nutrients,
- 4) vegetative reproduction and competition with other plants.

Monocot plants are characterized by the presence of

- (A) Tap roots
- (B) Fibrous roots
- (C) Annulated roots
- (D) Stilt roots

Sol

Ans [B]

Monocots have a fibrous root system, which is also known as an adventitious root system.



Fibrous root

Nodulated roots bearing family is

- (A) Mimosoideae
- (B) Caesalpinoideae
- (C) Papilionatae
- (D) Solanaceae

Sol

Ans [C]

Plants belonging to sub-family papilionatae of family leguminosae (e.g., pea, gram etc.) bear nodule-like swellings, called root nodules. These nodules contain nitrogen fixing bacteria which fix atmospheric free nitrogen in to ammonia.



Nodulated roots

Clinging and epiphytic roots are found in

- (A) Orchid
- (B) Tinospora / Trapa
- (C) Rhizophora / Pandanus
- (D) Pothos / Podostemon

Ans [A]

Clinging roots: These roots fix the epiphytes on the surface of the supporting object firmly and also absorb nutrients from the humus and dust that are accumulated on the surface of bark. E.g orchids



Bacteria found in root nodules of legumes are

- (A) Nitrobacter
- (B) Nitrosomonas
- (C) Rhizobium
- (D) Azotobacter

Sol

Ans [C]

Root nodules contain nitrogen fixing bacteria *Rhizobium leguminosarum* which fix atmospheric free nitrogen into ammonia. The fixed nitrogen is absorbed by the plant. In return, the plant provides food and shelter to bacteria. Such an association is called mutualistic symbiosis.

Rhizobium



- These bacteria can infect the roots of leguminous plants, leading to the formation of lumps or nodules where the nitrogen fixation takes place.
- About 90% of legume species can become nodulated.

In Pandanus (Screw pine) stilt roots arise from

- (A) Basal nodes
- (B) Upper surface of oblique stem
- (C) Lower side of oblique stem
- (D) Anywhere

Ans [C]

The aerial, adventitious obliquely growing roots that develop from the lower nodes of the stem are called stilt roots.

Stilt roots

e.g. Pandanus : In Pandanus the adventitious roots arise from the lower part of the main stem and grow obliquely towards the soil. They serve to keep the plant erect by giving additional support.



In Ipomoea batatas / Sweet potato the food is stored in

- (A) Root tuber
- (B) Stem tuber
- (C) Bud
- (D) Leaves

Sol

Ans [A]

Some of the adventitious roots store food materials and become swollen. They arise singly and do not attain a definite shape, e.g., sweet potato (*Ipomoea batatas*).

the "crown end" that
may produce sprouts



outer periderm secondary roots

Sweet potato tuber

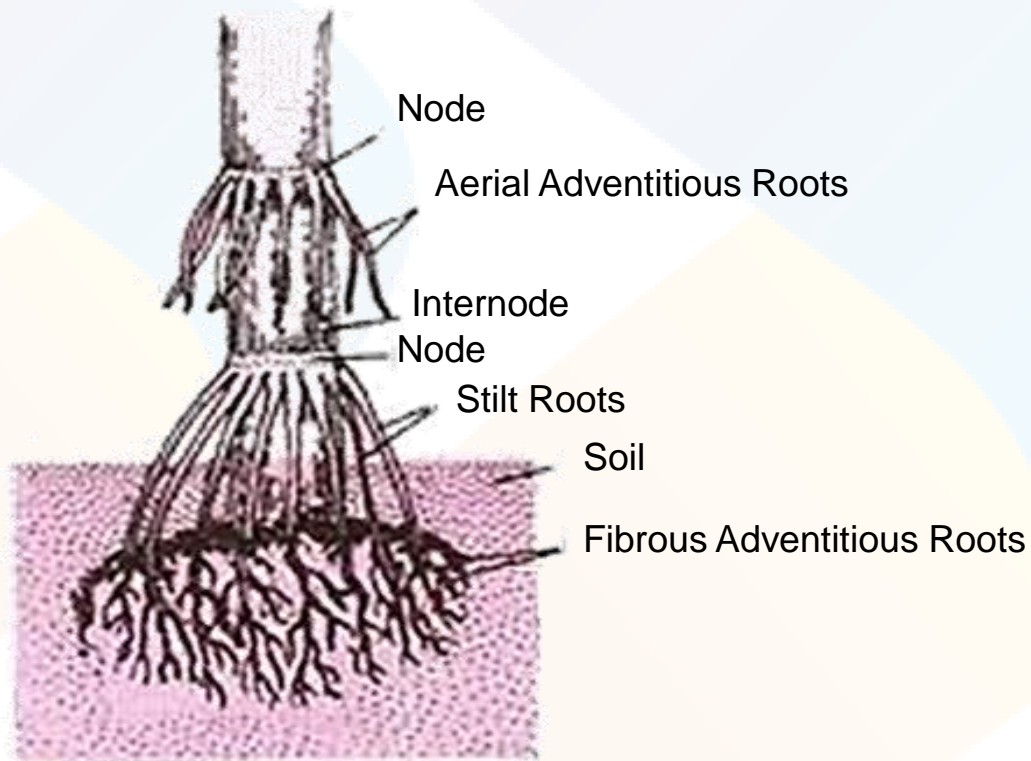
In maize, the fibrous roots develop from

- (A) Lower nodes
- (B) Upper nodes
- (C) Upper internodes
- (D) None of the above

Sol

Ans [A]

In maize, Pandanus etc., adventitious roots develop from the lower nodes of the stem to provide mechanical support and are called stilt roots.



Prolongation of radicle gives rise to

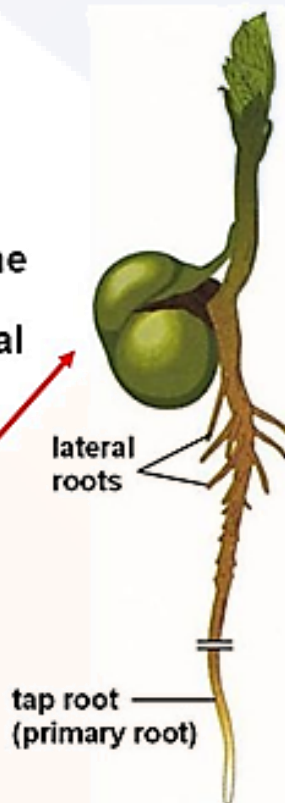
- (A) Fibrous root system
- (B) Primary root
- (C) Stilt root
- (D) Pillar root

Sol

Ans [B]

In nearly all the dicotyledonous plants, the primary root (Tap root) is derived from the radicle of the embryo.

In a tap root system, the radicle forms the primary root then adds lateral roots (Branch Roots).
Example: Pea.



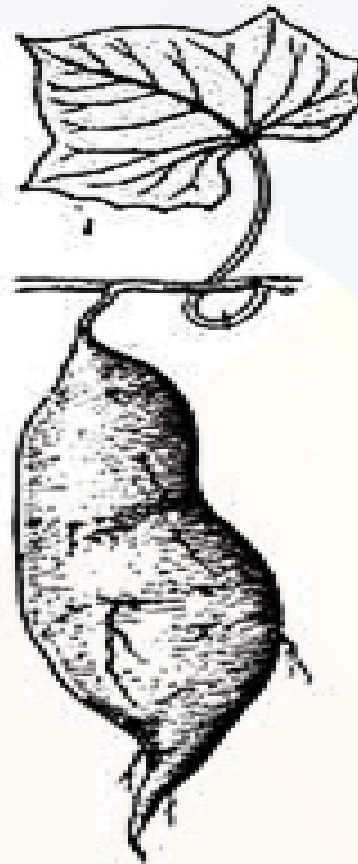
Edible part of Sweet potato is

- (A) Stem tuber
- (B) Unripe fruit
- (C) Adventitious root tuber
- (D) Rhizome

Sol

Ans [C]

Adventitious roots store food material hence it is edible part of sweet potato.



Tuberous root of sweet potato

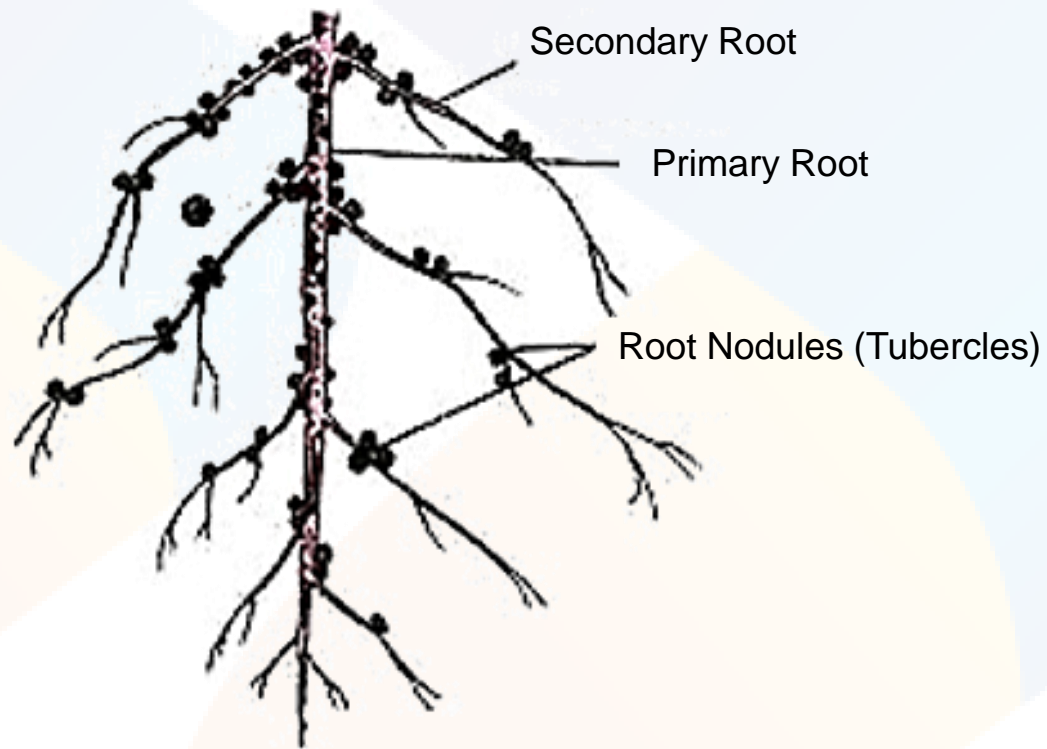
Leguminous plants possess

- (A) Napiform roots
- (B) Nodulated roots
- (C) Tuberous roots
- (D) Fusiform roots

Sol

Ans [B]

Leguminous plants possess nodulated roots



Nodulated root of a legume

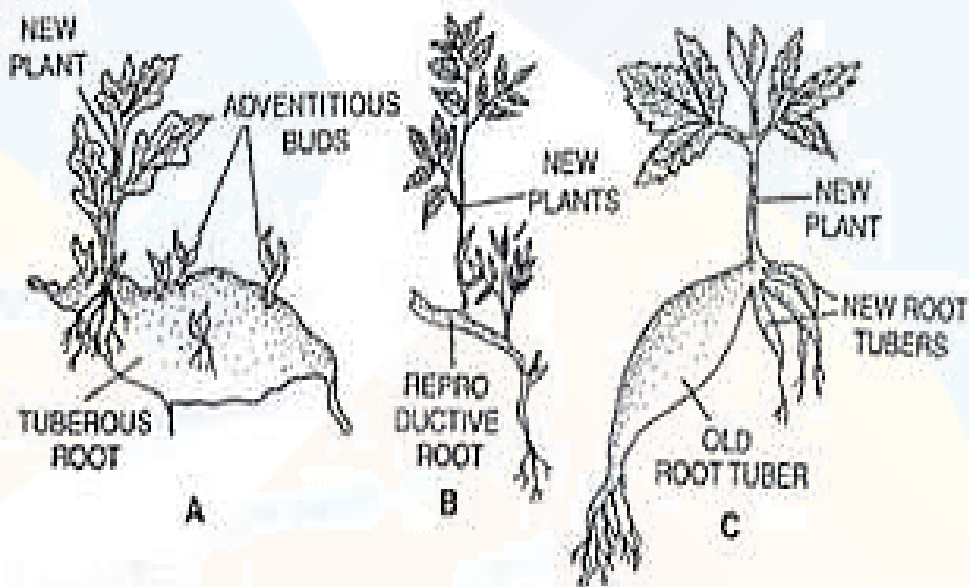
Roots are used in vegetative propagation in

- (A) Potato
- (B) Sweet potato
- (C) Ginger
- (D) Maize

Sol

Ans [B]

Reproductive roots are present in sweet potato. The adventitious roots may develop adventitious buds and help in vegetative propagation.



Which modification of root does not store food

- (A) Tuberous
- (B) Napiform
- (C) Conical
- (D) Stilt

Sol

Ans [D]

Stilt roots give extra support to the long unbranched stem. It does not store food.

q

Epiphytic roots occur in

(A) Rhizophora

(B) Trapa

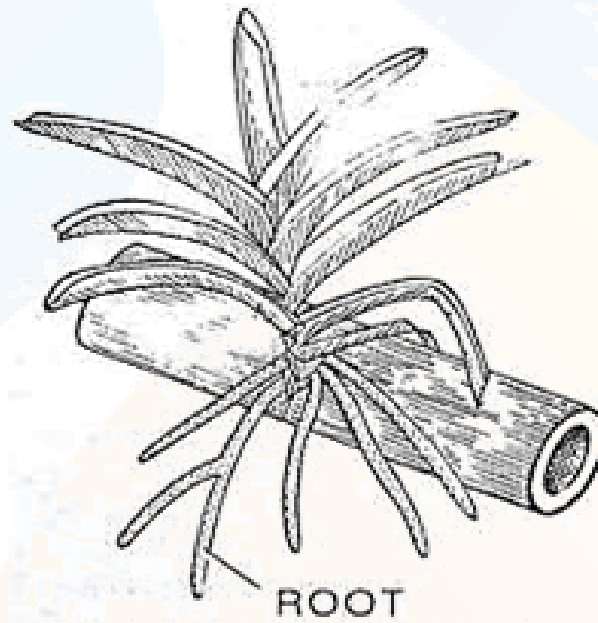
(C) Vanda

(D) Asparagus

Sol

Ans [C]

These roots hang in the air and possess velamen or spongy tissue for absorbing moisture directly from atmosphere. The epiphytic roots are devoid of root hairs and root caps. E.g Vanda



Epiphytic roots of Vanda

Which one is Schimper-Brown series

- (A) Arrangement of leaves on stem or branches
- (B) Arrangement of axillary buds on stem or branches
- (C) Arrangement of flowers in an inflorescence
- (D) Arrangement of sepals in a flower

Sol

Ans [A]

Arrangement of leaves on stem or on its branches is called schimper brown series

q

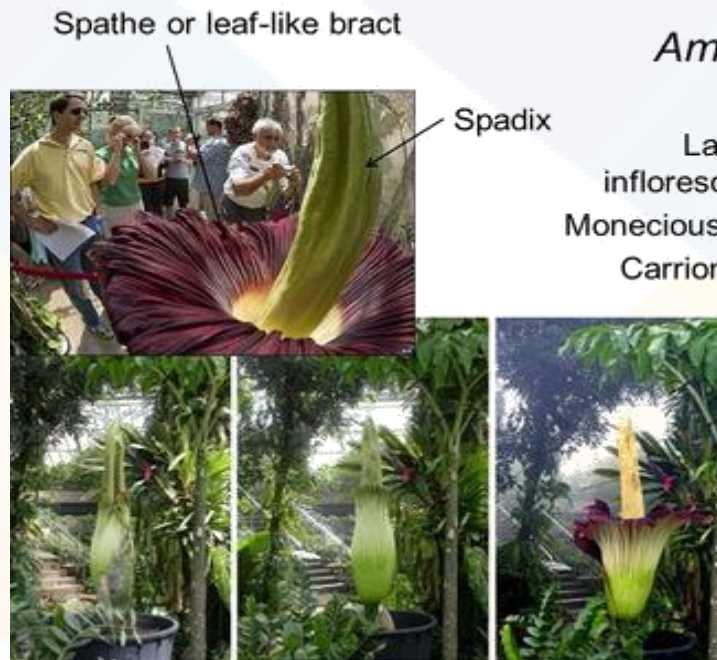
Largest inflorescence is found in

- (A) Acalypha
- (B) Populus
- (C) Amorphophallus
- (D) Cabbage

Sol

Ans [C]

Amorphophallus (simple spadix inflorescence) has largest inflorescence which 5.5 m long.



*Amorphophallus
titanum*

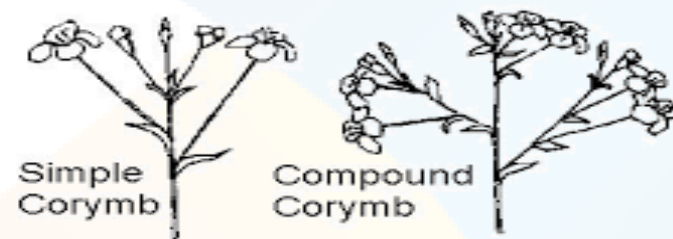
Largest unbranched
inflorescence in the world
Monecious and protogynous
Carrion flower (fly/beetle
pollinated)
Indigenous
to the forests
of Sumatra

In Cauliflower the edible part is the entire inflorescence which is

- (A) Compound Corymb
- (B) Corymbose
- (C) Umbel
- (D) Catkin

Ans [A]

The edible part of cauliflower is the inflorescence. Its inflorescence is also known as compound corymb or corymb of corymbs. Here the main axis (peduncle) branches in a corymbose manner and each branch bears flowers arranged in corymbs..



Cauliflower inflorescence

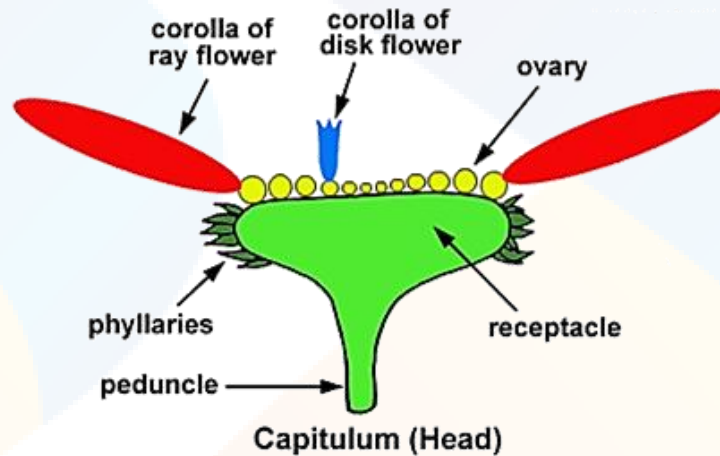
Which of the following is not a flower

- (A) Rose
- (B) Lotus
- (C) Sunflower
- (D) Passion flower

Sol

Ans [C]

Sunflower (*Helianthus annus*) is a inflorescence (capitulum). It is a plant of family compositae (Asteraceae).



Family (Asteraceae), Capitulum: Inflorescence Of The Sunflower Family

q

A single basal ovule is present in

- (A) Composite
- (B) Malvaceae
- (C) Solanaceae
- (D) Cruciferae

Sol

Ans [A]

Basal Placentation occurs when there is only one to a few Ovules, one Locule and the Placenta is at the base of the Ovary.

Composites offer a good example of Basal Placentation. Each Disk or Ray Flower has one Ovule mature in each Ovary, and that ovule has Basal Placentation



Basal placentation

q

Inferior ovary occurs in

- (A) Cruciferae
- (B) Composite
- (C) Malvaceae
- (D) Ranunculaceae

Sol

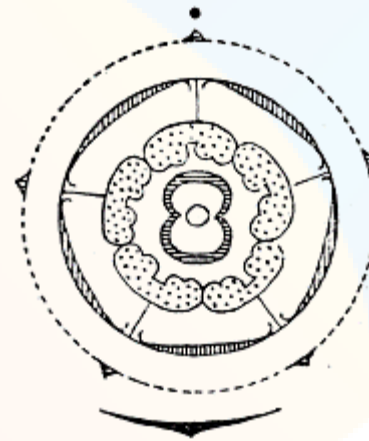
Ans [B]

In members of the Compositae family

- Carpel: Bicarpellary; syncarpous
- ovary inferior;
- placentation basal.



Inferior ovary



Floral diagram – Compositae family

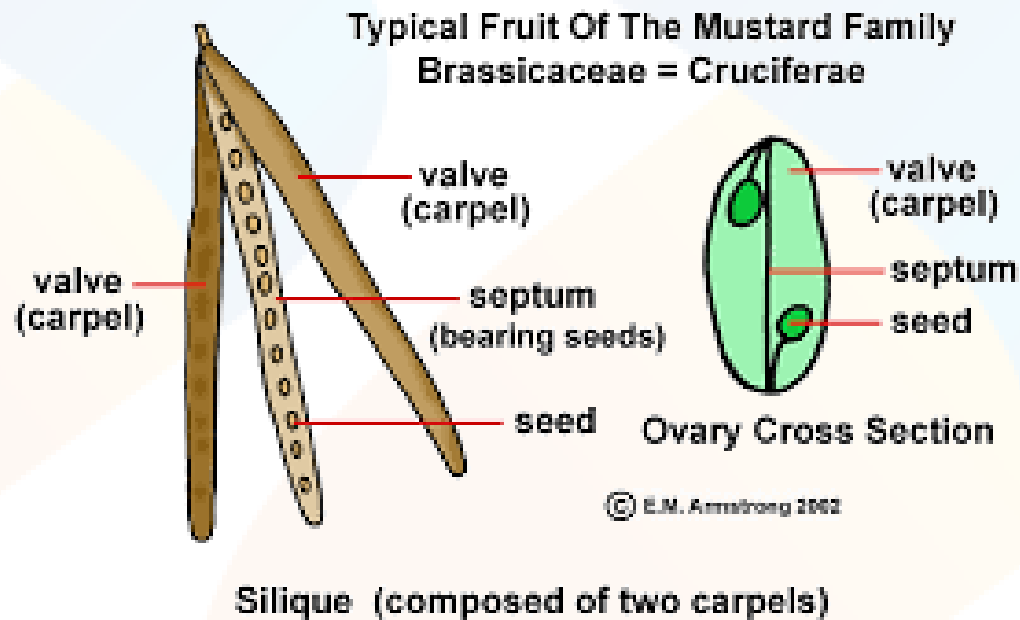
Transversely placed syncarpous ovary occurs in

- (A) Composite
- (B) Cruciferae
- (C) Malvaceae
- (D) Cucurbitaceous

Sol

Ans [B]

Members of Cruciferae family have bicarpellary rarely tricarpellary syncarpous, ovary superior, unilocular, becomes bilocular due to the development of false septum called replum: parietal placentation, ovules many, style short, stigma simple or bifid



q

Fusiform roots are found in

- (A) *Solanum tuberosum*
- (B) *Calocasia*
- (C) *Daucus carota*
- (D) *Raphanus sativus*

Sol

Ans [D]

Fusiform is a modified tap root. The primary root of the system is swollen at the middle and tapers gradually at both the ends forming a spindle shaped structure. Example of fusiform roots is radish.



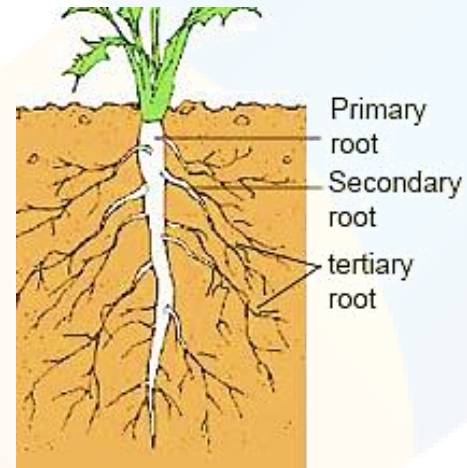
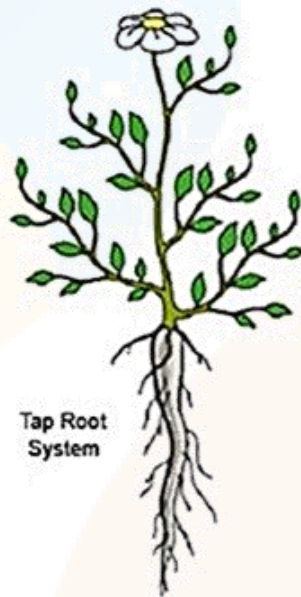
Fusiform root

Primary root and its branches constitute

- (A) Adventitious root system
- (B) Tap root system
- (C) Fibrous roots
- (D) Seminal roots

Ans [B]

In a tap root system the primary root develops from the radicle of the embryo, forms the dominant central axis or tap root that bears root branches of various denominations. Various parts of the tap root system are primary root, secondary roots, tertiary roots and rootlets.

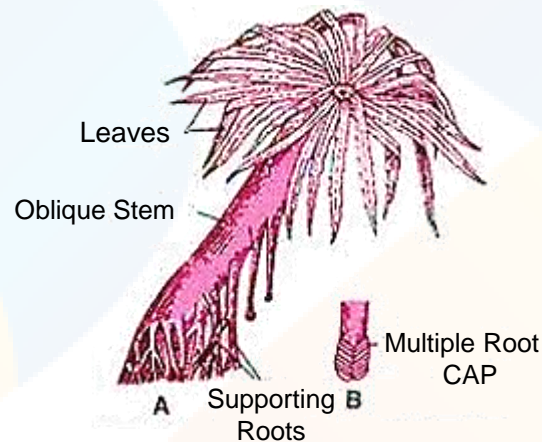


Stilt roots are reported from

- (A) Pandanus
- (B) Radish
- (C) Mango – ginger
- (D) Bryophyllum

Ans [A]

In some plants roots arise from lower nodes of stem and enter the soil to provide extra support. They behave as ropes of a tent. Such roots are called stilt or brace roots e.g., Pandanus.



Pandanus showing oblique stem and supporting roots having multiple root caps

q

Climbing roots are present in

- (A) Loranthus
- (B) Curcuma amada
- (C) Rose
- (D) Piper beetle

Sol

Ans [D]

Climbing roots are aerial adventitious root help the weak stemmed plants to climb up a support e.g., Piper beetle(betel wine)



q

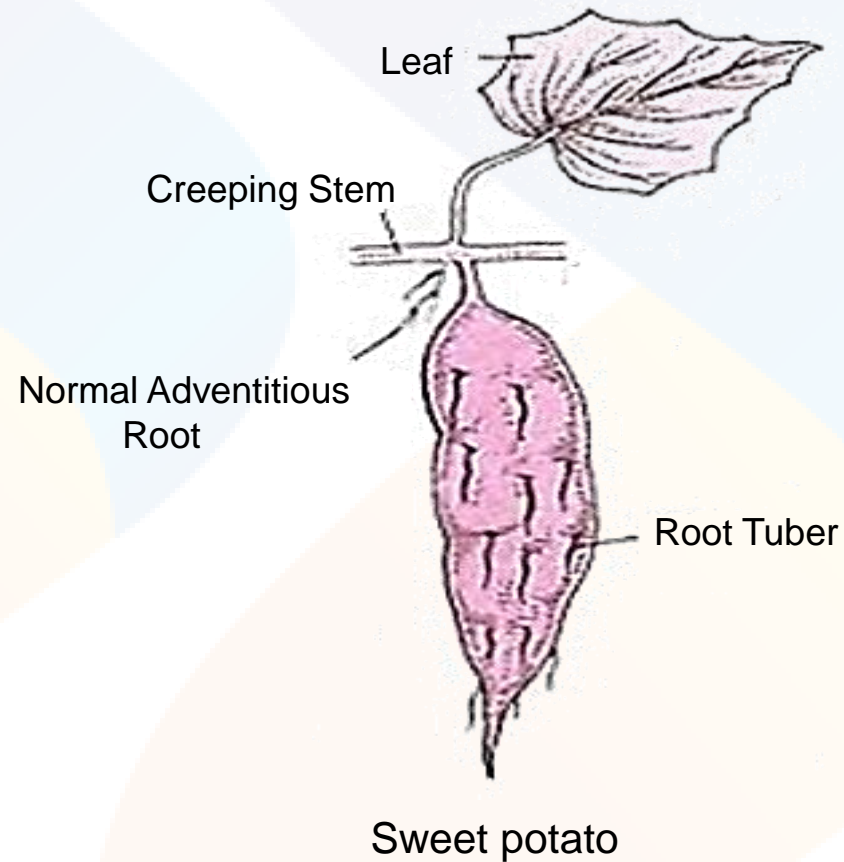
Sweet potato is modification of

- (A) Leaf
- (B) Root
- (C) Stem
- (D) Flowering axis

Sol

Ans [B]

Sweet potato is modification of root



q

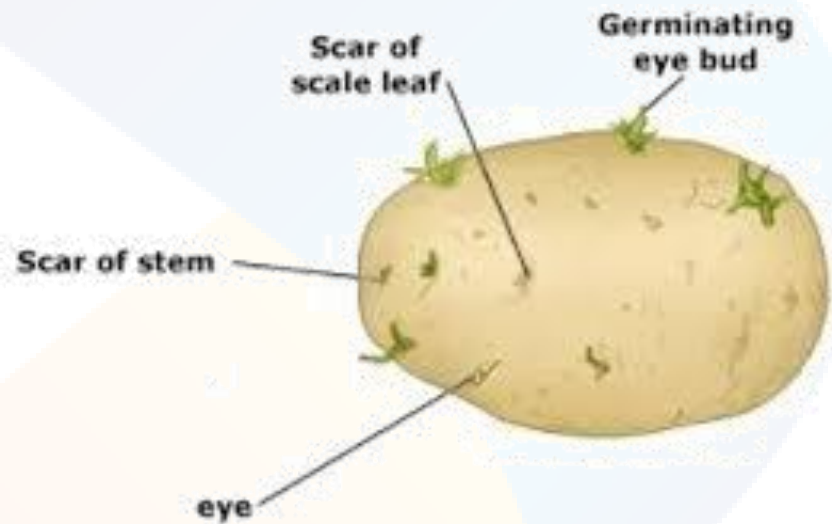
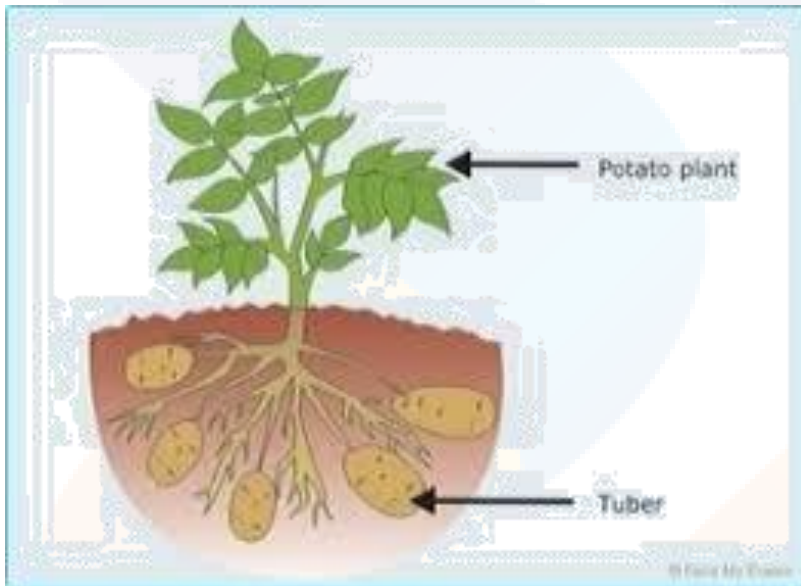
Which is not a product of root

- (A) Sugar beet
- (B) Carrot
- (C) Radish
- (D) Potato

Sol

Ans [D]

Potato is an underground modification of stem

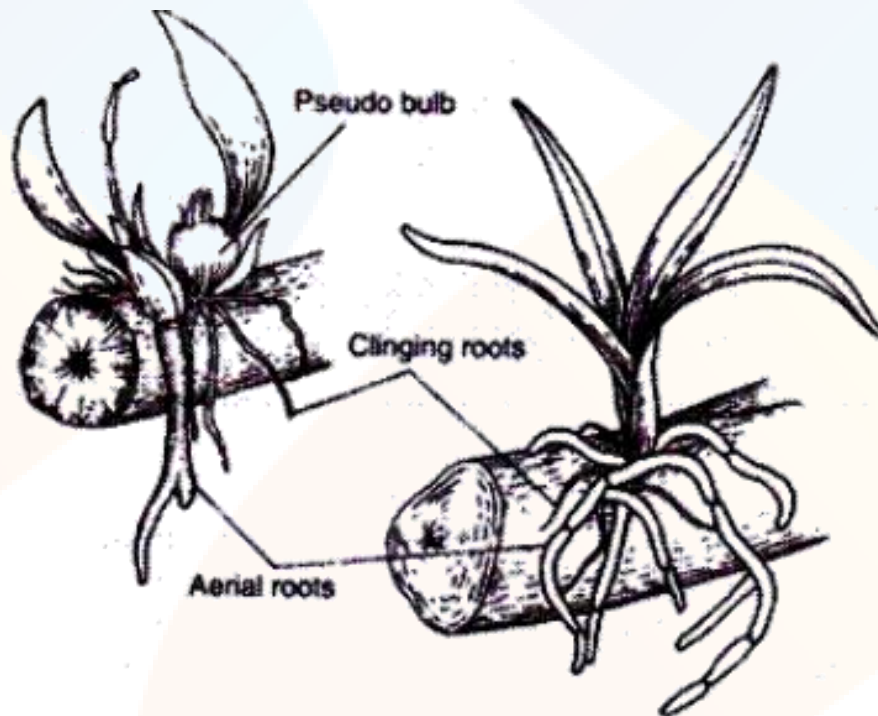


Aerial absorptive roots occur in

- (A) Epiphytes
- (B) Mesophytes
- (C) Hydrophytes
- (D) Xerophytes

Ans [A]

Aerial roots are a type of adventitious root, and they grow from the plant stem or leaf tissues. They are usually found in climbing vines, epiphytes (like orchids), and hemiepiphytes (like strangler figs and banyan trees).



q

Balancing roots occur in

(A) Hydrilla

(B) Vallisnaria

(C) Lemna

(D) Lotus