

## जनन (Reproduction)

{ Plants and animals }

• All the living things are called organisms.

• The plants and animals are living things.

\* The production of new organisms from the existing organisms of the same species is called reproduction.

• The most important characteristic of living organisms is their ability to produce more numbers of their species.

{ Reproduction in }  
Plants

• There are different methods of reproduction in plants.

\* All the different methods of

reproduction in plants can be divided into 2 main groups:-

- ① Asexual reproduction
- ② Sexual reproduction

\* Gametes:- The special cell involved in sexual reproduction called gametes. Gametes are the reproductive cells which are commonly known as sex cells.

• Gametes are of two types:- male gametes and female gametes.

\* The term 'asexual' means not involving the fusion of sex cells (gametes).

\* The term 'sexual' means involving the fusion of sex cells (gametes).

1.) The Asexual reproduction of plants:-

• The production of new plants from existing plants without involving of gametes is called asexual reproduction. It is called asexual

reproduction because it does not make use of special cell called gametes for reproducing new plants. Since, there is no fusion (combination) of gametes. No seeds are formed in this method of reproduction.

\* In Asexual reproduction, only one parent involve and in sexual reproduction, <sup>male, females</sup> ~~parents~~ are involved.

- Thus, in asexual reproduction in plants, new plants can be obtained from existing plants without seeds.
- New plants can be grown from old plants even without seeds.
- Some of plants which can be produced by asexual reproduction method (without seed) are: rose, potato, ginger, turmeric, sweet potato, Dahlia, sugarcane, etc.

## (Sexual reproduction) in plants

\* The reproduction of new plants from existing plants by the fusion of their gametes is called sexual reproduction.

- It's a sexual reproduction because sex cells are involved in this method for producing new plants.
- In sexual reproduction in plants, the fusion of male and female gametes leads to formation of seeds.

\* In sexual reproduction, new plants are obtained from existing plants through seeds. Ex - wheat, barley, legumes, etc.

\* The basic difference between a sexual reproduction and an asexual reproduction is that new plants are produced without seed.

1. In asexual reproduction, new plants are produced without seed.
2. In sexual reproduction, new plants are produced from seed.

## Asexual reproduction in plants.

- In asexual reproduction, new plants are produced from existing plants without the production of seed.
- The asexual reproduction in plants can take the following methods:
  - 1) Vegetative propagation
  - 2) Budding.
  - 3) Fragmentation
  - 4) Spore formation

\* 1) Node :- Node is a point of stem of a plant where a leaf is attached. Buds are also present in the the regions of a plant.

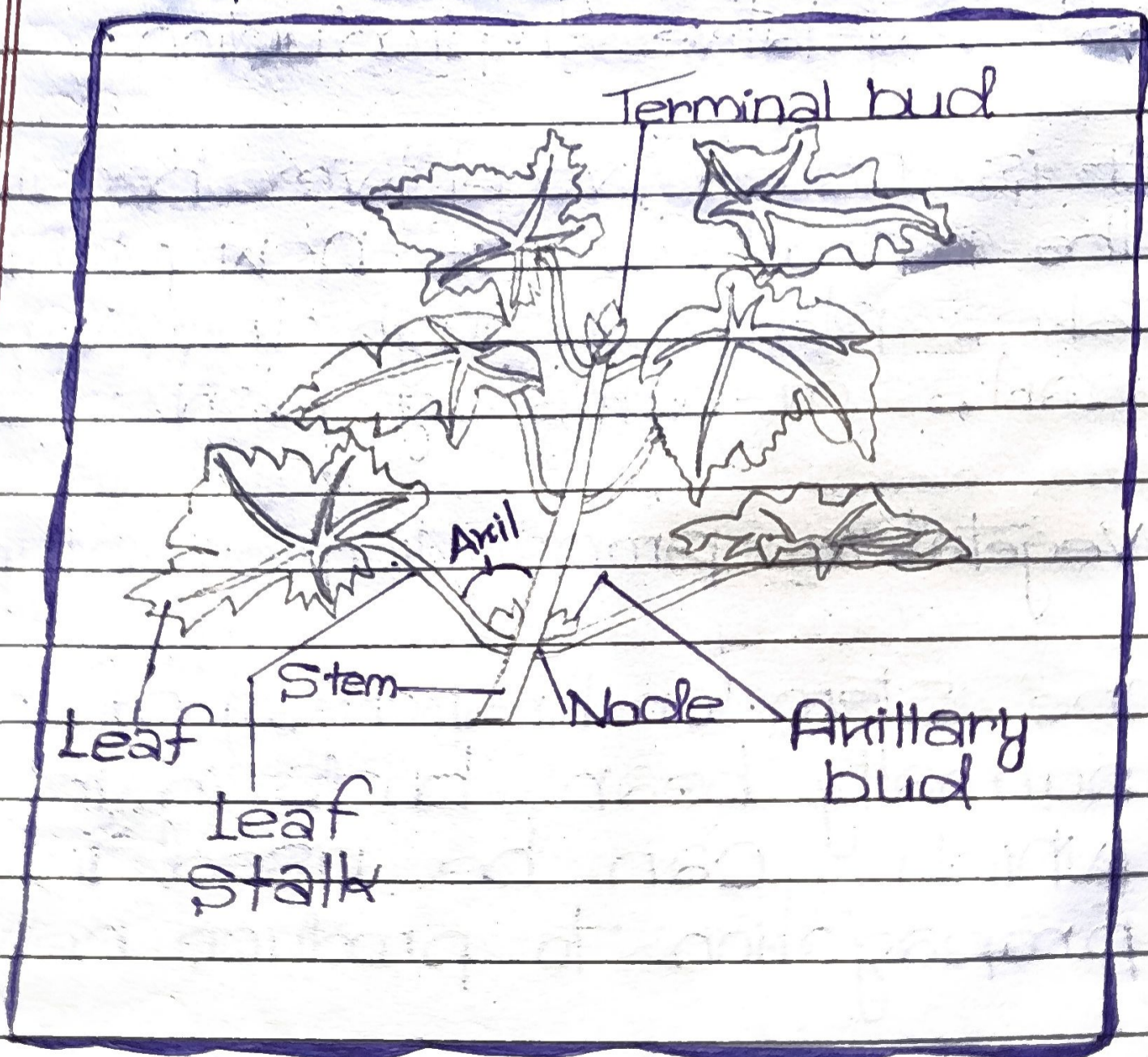
2) Axil :- Axil is the super angle between a leaf stalk and the stem from which it is growing.

3) Bud :- Bud is compact, knob-like undeveloped shoot consisting of shortened stem and immature overlapping leaves.

Note:- Buds are the growing plants points of plants.

- The buds at the end of a stem or branch are called terminal buds.

Note:- The stems, the roots, and leaves are called vegetative part of plant.



## \* Vegetative propagation:

- 1) Vegetative propagation is an asexual method of reproduction in plants.
- 2) In vegetative propagation, new plants are reproduced from the of old plant.
- 3) Vegetative propagation is also known as vegetative reproduction.
- 4) It is called vegetative because the reproduction of new plants takes place through the vegetative parts of existing plants.

## \* Vegetative propagation by stems.

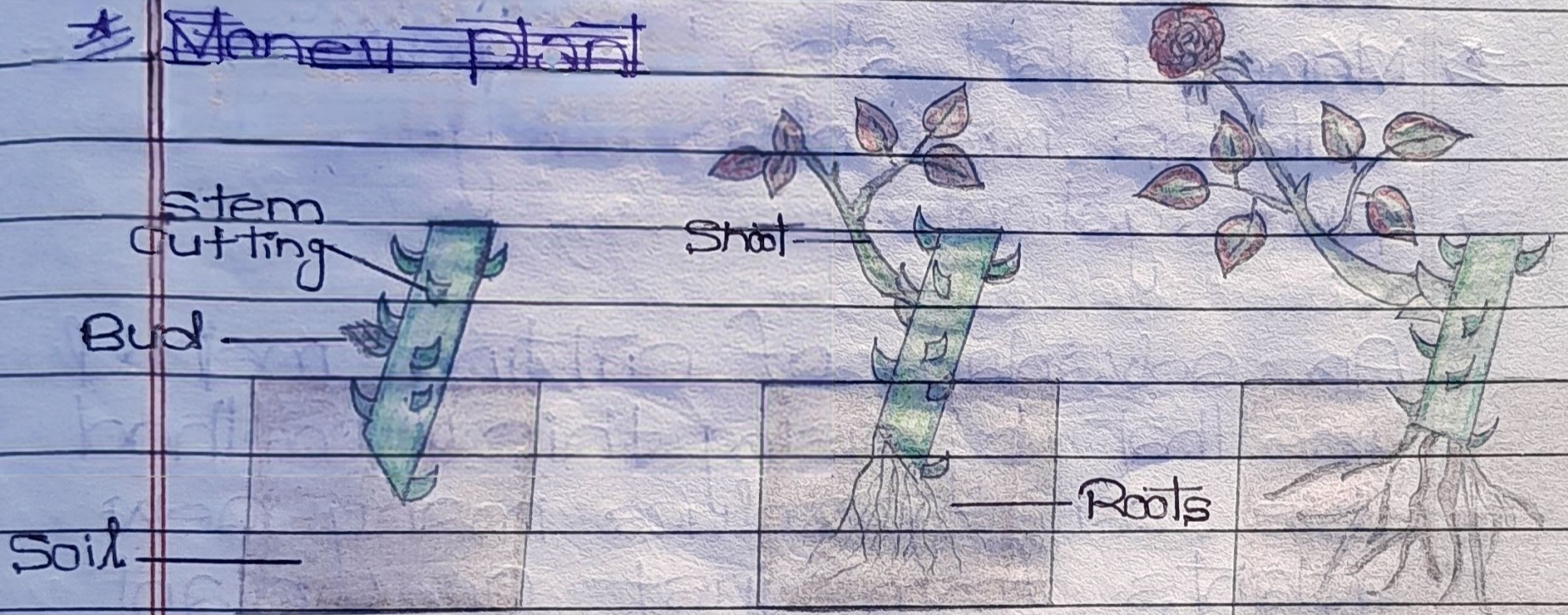
The stem (or branches) of plant normally bear buds in the 'axils' which can be used in vegetative propagation to produce new plants.

Note:- New plants can be obtained

from the stem (branch) of existing plant by the method of 'cutting'.

→ A small part of stem (branch) of a plant which is removed by making cut with a sharp knife, is called cutting.

\* ~~Maneu~~ plant



A stem cutting (with buds) planted in soil

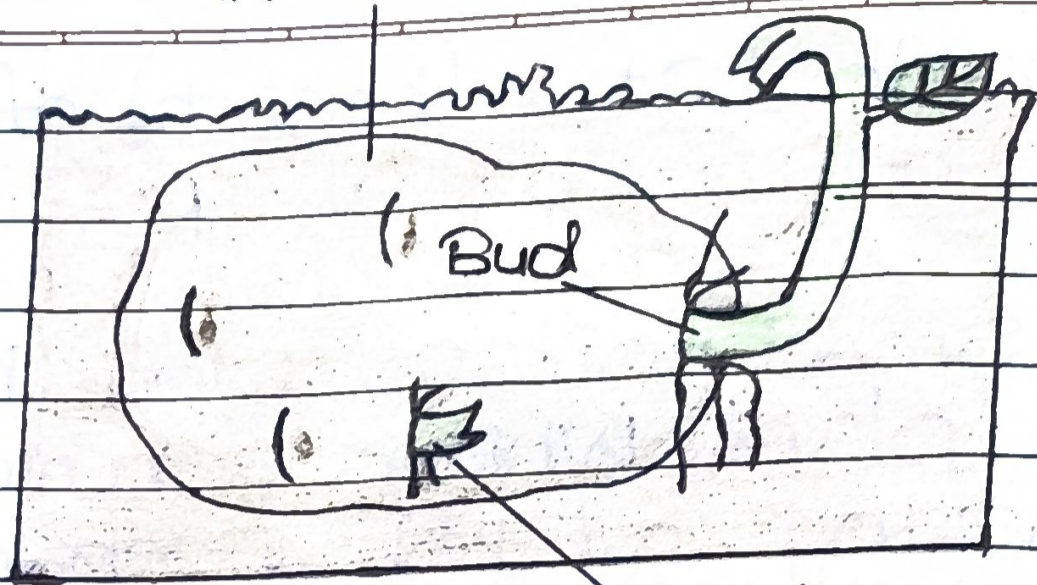
Stem cutting develops roots and shoot

A new plant is formed.

old potato tuber planted  
in soil

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A new potato plant  
growing from  
bud.

Another new plant  
growing from second  
bud

\* Money plant also be grown by the cuttings method of vegetative propagation.

An advantage of cutting method is that by using this method we can produce many new plants from just one plant quickly without waiting for flower and seeds.

\* There are 2 types of tuber: stem tuber and root tuber.

→ Potato is stem tuber.  
Potato tuber can be used for vegetative propagation of potato plants.

→ Each potato tuber can produce more than one new potato plant.

→ A potato tuber has many buds (called eyes) on its body which appear like scars.

\* The vegetative propagation method of producing potato plants by using 'potato tuber cutting' is much faster ~~than~~ the production of potato plant from seeds.

\* } Reproduction Science L.W 06/09/24  
\* } in plants }  
\* }  
\* }  
\* }

i) Vegetative propagation by roots

→ The root of plants normally do not bear buds.

→ Some plants which have modified, thickened, roots which stored food, they bear buds.

→ The roots of some plants like Sweet potato, and Dahlia can be used to produce new plants.

## 2) Vegetative propagation by leaves.

- Some plants reproduce themselves from leaves. The leaves of some plants develop buds on them. ~~Some~~ <sup>One</sup> example of a plant which can reproduce from its leaves is Bryophyllum. (Bryophyllum is also called "pencil leaf plant").
- The leaf of Bryophyllum develops some buds ~~in~~ <sup>at</sup> its margins (edges).
- When a mature leaf of Bryophyllum plants fall on the ground, then each bud can grow into a new plant.
- Sometimes, even before a leaf drops off from a Bryophyllum plant, we can see new plantlets <sup>already</sup> growing on its.
- Bryophyllum plant can reproduce new plants.
- Another plant called Begonia also reproduce by vegetative propagation through its leaves.
- \* The Begonia plant has buds on its leaves which can grow into new

plant when the leaves fall on the ground.

Note:- The two plants, Bryophyllum and Begonia, can be reproduced from their leaves.

\* \* \* \* \*

1.) The plants such as cacti produce new plants when their parts get detached from the main body and fall on the ground.  
(Singular of Cacti is Cactus)

2.) Each detached part of Cactus plant which falls on the ground can grow into new plant. For Ex- If a part of the stem of Cactus plants breaks off from the main plant body in the sticks in the ground, it develops roots and grows to become a new Cactus plant.

\* \* \* \* \*

## \* Advantages of vegetative propagation of plants.

→ The reproduction of plant by the method of vegetative propagation has the following advantages:-

1.) The new plants produced by vegetative propagation take much less time to grow and bear flowers and fruits as compared to the plants grown from seeds.

2.) The new plants produced by vegetative propagation are exactly like the parent plant.

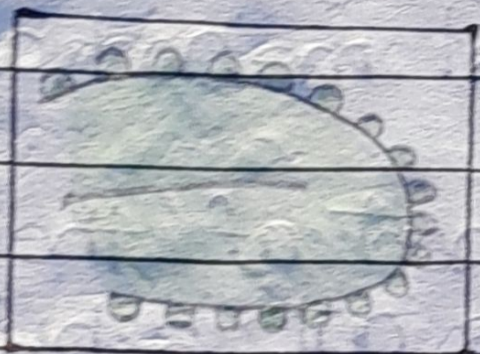
3.) So all the desirable features of parent plant will be replicated in the new plant.

Leaf of Bryophyllum

Ajanta

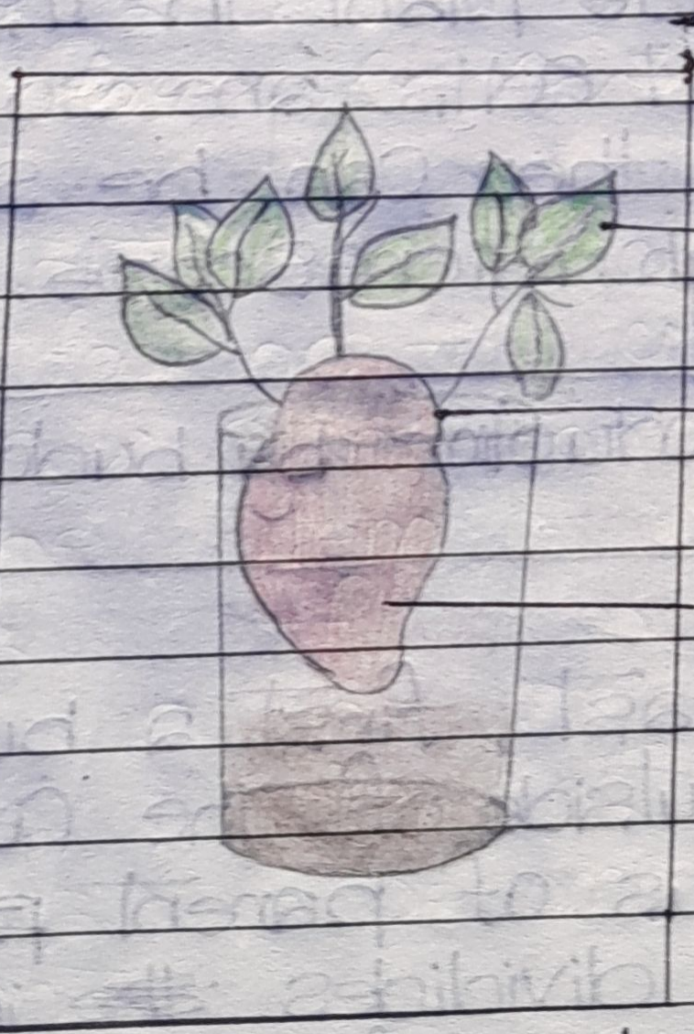
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A leaf of Bryophyllum plant with buds in the margin.

plantlets growing in the margin of Bryophyllum leaf.



Leaves of Sweet potato

New plant growing from bud

Sweet potato (Root tuber)

A new sweet potato plant grows from each bud on the old sweet potato.

## (Budding)

Budding is asexual method of reproduction.

\* In budding, small part of the body of parent plant grows out a bulb like projection called 'bud' which then detaches and become a new plant.

Note:- yeast is non-green plant.

• yeast is single <sup>cell</sup> called plant.

• Each single cell in yeast is complete plant in itself.

• yeast cells are so small that they can be seen only through microscope.

### \* yeast reproduction by budding.

→ In the yeast, first a bud appears on the outside of the cell wall.

→ The nucleus of parent plant yeast cell then divides ~~the~~ into 2 parts and one part of the nucleus move into bud.

- Ultimately, the buds separate off from the parent yeast cell and forms a new yeast cell or new plant.
- The budding in the yeast, however often takes place so fast that the first buds starting forming their own buds and all of them remain attached to the parent yeast cell forming a chain of yeast cell.
- After sometime, all yeast cells of chain separate from one another and form individual yeast plant.
- The new yeast cell grow, mature and produce more yeast cells. If this process continues, then a large number of yeasts cells are produced in a short time.