2/17

Reproduction in Organisms

Lifespan :→

Birth → Natural death

Lifespan

↓ Birth | ↓ Juvenile phase | ↓ Repro Phase | ↓ ageing or Senescence | ↓ Death.

→ Mayfly → 24 hrs (1 day)
(1 day insect).

→ longest → Tortoise = 300-400 years
→ Bowhead whale = 150-200 years.
→ Parrots = 140 years.

Plants → 1000 year (Banyan)

Types of reproduction :→

Asexual

→ only 1 organism reproduces (1 parent)

→ No fusion of gametes

→ only Mitotic.

→ clone formation.
↓
genetically & Morphologically Identical.

Sexual

→ 2 parents are involved.

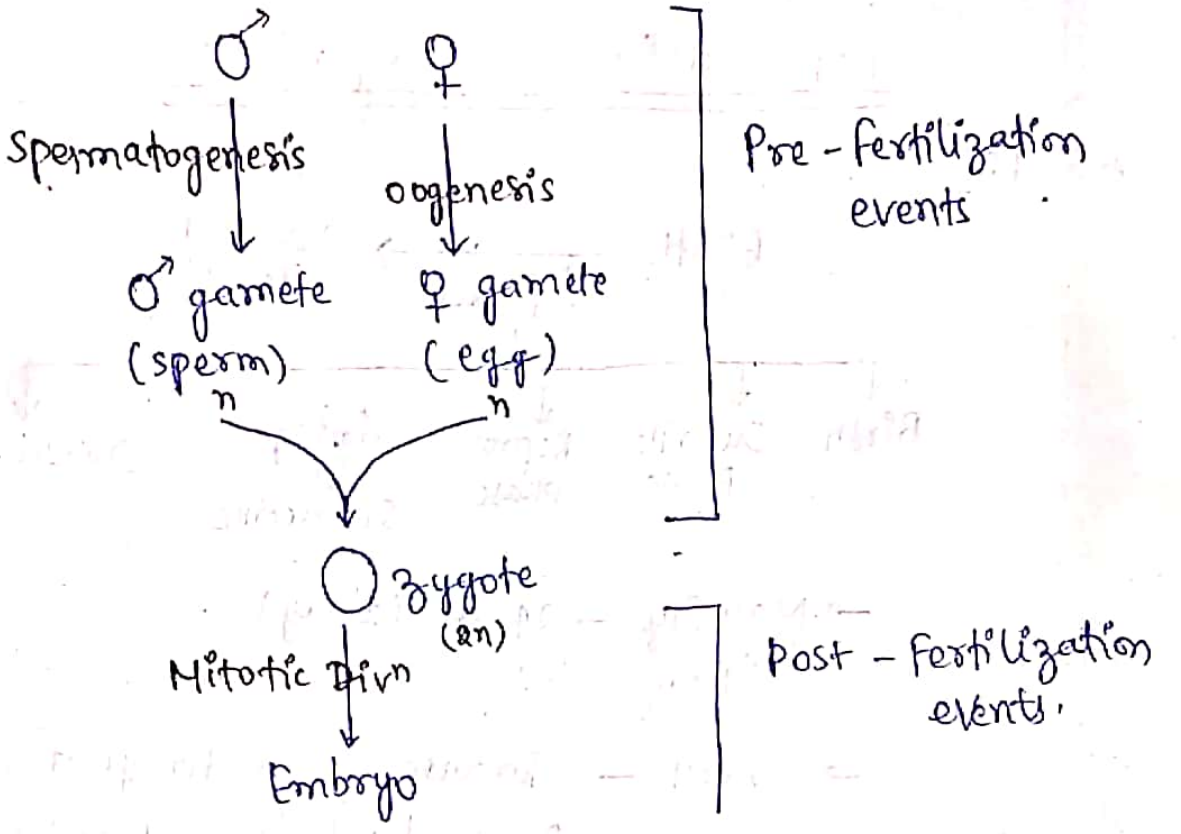
→ Formation & fusion of gametes.

→ Meiosis & Mitosis.

→ Recombination & variation.

Sexual reproduction in ~~Plants~~ Organisms :-

→ 2 Parents are involved.
* Pre Fertilization events.
* Post Fertilization events.



Sexuality In Organisms:→

1. In plants:→

→ sexual organ = Flower.

1 flower has both ♂ + ♀ ⇒ Bisexual

1 flower " only ♂ ⇒ Unisexual (staminate)

1 flower " " ♀ ⇒ Unisexual (Pistilate)

* 1 Plant having both sex Organs ⇒ Monoecius
* 1 Plant " only ♀/♂ organs ⇒ Dioecius

2. In Animals:→

Hermophrodite (Bisexual) both sex organs in 1 organism
eg→ earthworm.

Unisexual ♀ ♂

Note:→ Monocarpic → reproduce only once in their lifespan

eg→ Bamboo (50-100 years), wheat, rice.

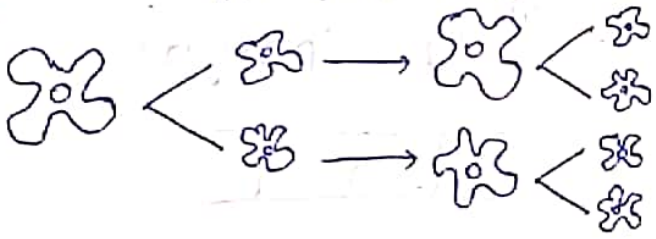
"Strobilanthus kunthiana" → Flowers in 12 years
Found in South.

Asexual Reproduction :→

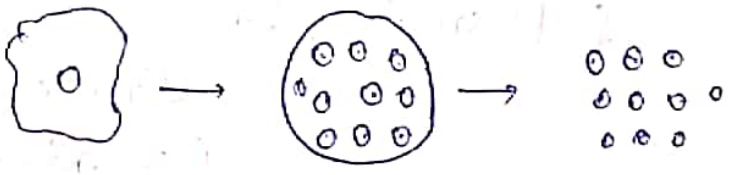
1. Fission :→

→ Binary Fission (eg→ Amoeba)

→ organisms dividing by binary fission are considered to be Immortal.



→ Multiple Fission (eg→ Plasmodium)
Malaria



2. Budding :→

Exogenous

→ out growth (bud) on the outer side

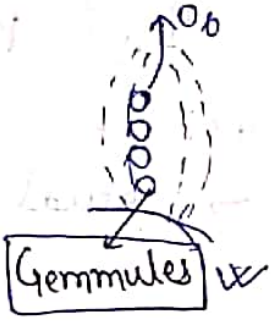
eg→ Yeast.

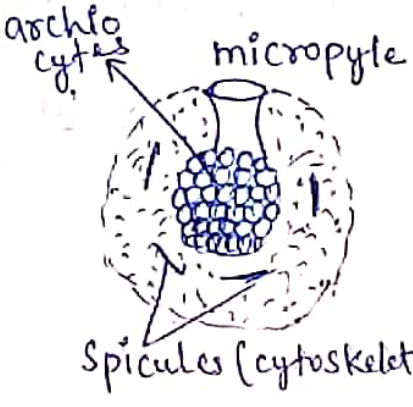
Hydra.

Endogenous

→ bud is formed inside.

eg→ Spongilla (only Freshwater sponge)





3. Spore formation :→

a) Zoospores :→

→ Motile

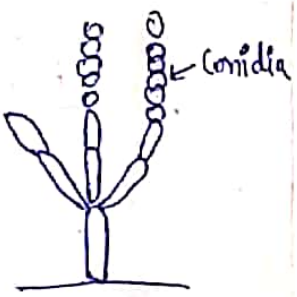
eg → Chlamydomonas

b) Conidia :→

→ Non-motile.

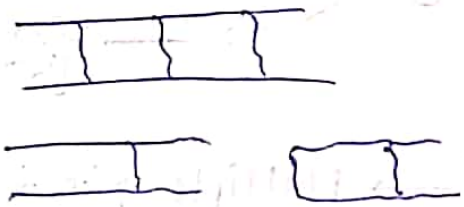
→ Found in chain.

eg → Penicillium.

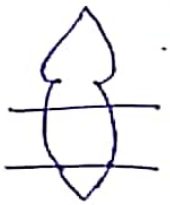


4. Fragmentation :→

eg → Spirogyra.



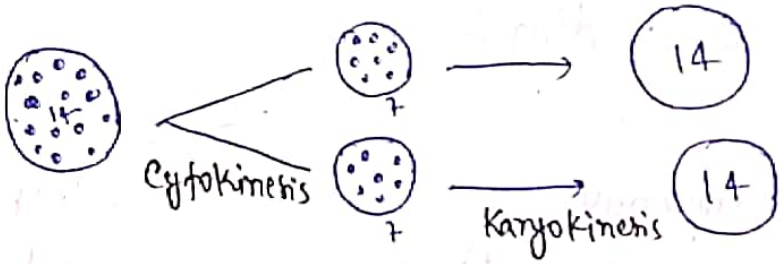
Planaria



5. Plasmotomy :→

eg → Multinucleate Protozoans

(opalina, Paelomyxa)



Note :→ In Plasmotomy Firstly occurs Cytokinesis then Karyokinesis.

Asexual Reproduction in Plants :→

1. APOMIXIS :→

→ asexual repro in plants by Agamospermy

Formation of embryo from an Unfertilized ovule

a) Adventive Polyembryony :→

→ embryo develops from a diploid cell of nucellus or Integuments.

eg → In Citrus Plants.

* embryo of citrus (Adven. Polyemb) is far better developed than normal embryo.

b) Recurrent Agamospermy :→

~~→ Parthenogenesis (Banana)~~

→ embryo from → 2n MMC.
↓
Megaspore Mother cell.

V.V.I

c) Non-recurrent Agamospermy :→

→ embryo from → (n) Unfertilized egg

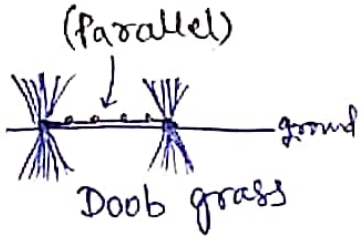
→ Parthenogenesis (Banana).

(2) Vegetative Propagation :→

(1.) Stem

(a) Runners :→

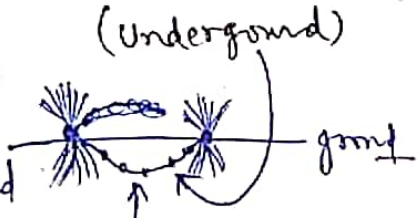
eg → Cynodon (Doob grass).



→ the branch connecting 2 runners remains Parallel to ground & has many nodes in b/w them.

(b) Suckers :→

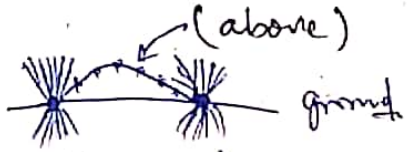
eg → Chrysanthamam



→ the branch is underground making a loop (semicircle).

(c) Stolon :→

eg → Strawberry.



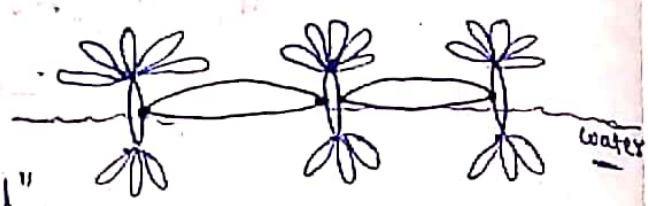
→ the branch (loop) is above the ground.

(d) Offset :→

eg→ Eichornia

↓

"Terror of Bengal"

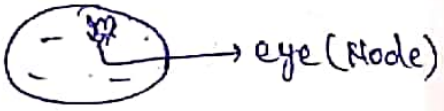


→ Same as runners but are found on the surface of a lake or pond.

→ No nodes b/w 2 offsets. multiple

(e) Tuber :→

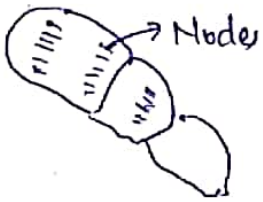
eg→ Potato



(f) Rhizome :→

eg→ Ginger, Banana

→ Rhizome is Underground however, plant arising (new) is above



(g) Bulb :→

eg→ Onion & Garlic.

(h) Corm :→

eg→ Colocasia.

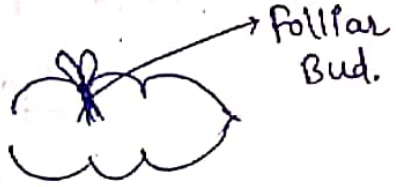
(2.) Roots :→

eg→ Dalbegia, Sissaw (shisham wood)
Sweet Potato (Ipomia Potata)

* Roots have radicle buds.

③ Leaf :→

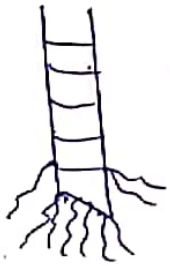
eg→ Bryophyllum
Begonia,
Kalenchoe



Artificial vegetative Propagation :→

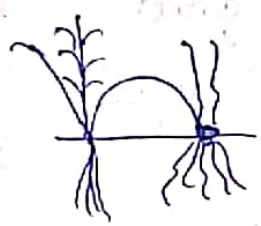
1. Cutting :→

→ Stem is cut and diagonally.
→ dipped in Auxins

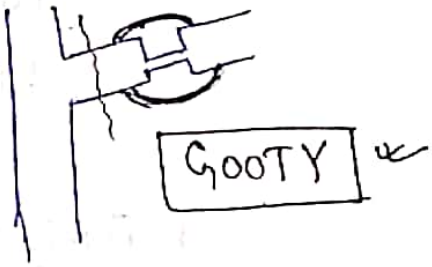


2. Layering :→

Ground layering
eg→ Jasmine.

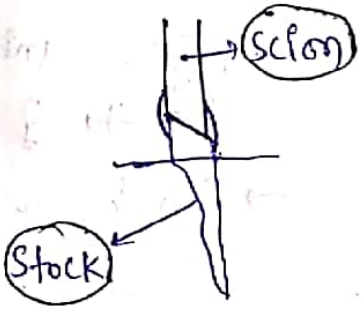


air layering
eg→ Gauva, mago, citrus.



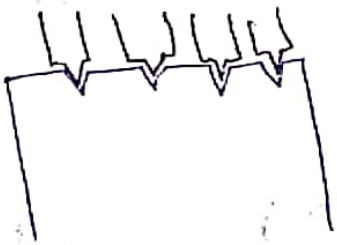
3. Grafting :→

→ Combining characters of 2 diff. plants



Tongue grafting
(diameter same)

wedge Grafting
(dia. of scion is less)



crown grafting

4. Micropropagation :→

→ Tissue Culture. → same character.
→ vegetative / Reprod. part can be used

Sexual reproduction in Organisms :→

* Gametogenesis :→

→ Higher animals ♂ Spermatogenesis
♀ Oogenesis

→ In plants ♂ → in pollen (Microsporogenesis OR Microgametogenesis)
♀ → in the ovule. (Megasporogenesis OR Megagametogenesis)

* Gamete Transfer :→

Bryophytes ♂ → motile.
♀ → Non-motile.

Higher Plants → ♂ gametes → By pollination.
Higher Animals → ♂ deposits the gametes in the ♀ body.

* Fertilisation / Syngamy :→

→ Fusion of gametes.

Ext. Fertilization
→ Frogs (in water)

Internal Fertilization
→ Higher animals fertilize in the ♀ body.
→ In higher Plants

* Embryogenesis :→

→ egg Producing / laying → Oviparous.
→ Give Birth → viviparous.

Note :→ Cledoic eggs → "self Sufficient" (yolk content-more)
↳ Birds.

embryo in plants → in seeds → In fruits (angio)
only seeds (gymno).