

6. PLANT GROWTH AND DEVELOPMENT

1 x 4 = 4 Marks

ROOT POINTS

1. **Growth** is an irreversible, permanent increase in the size of an organism or its parts or cells.
2. Animals stop growing after maturity.
3. But in higher plants, **roots stems** and **branches** have **non-stop growth**.
4. While other organs like **leaves, flowers** and **fruits** show limited or **definite growth**.
5. **Plant growth** and development is affected by **light, temperature**, nutrition, oxygen etc.
6. Growth can be **arithmetical or geometrical** based on the **cell division in root**, shoot.
7. There are three principle phases in growth – **lag, log and senescent phases**.
8. The **flowering response** of plants to periods of day/night is called **photo periodism**.
9. **Auxins** are powerful **growth hormones** produced in the **stem tips** of plants. [IPE]
10. **Gibberellins** are growth hormones that stimulate fruit repining , stem elongation, termination, flowering, sex expression, enzyme induction, leaf & fruit senescence. [IPE]
11. **Cytokinins** are a class of plant growth hormones that promote cell divisions in plant roots.
12. **Ethylene** is a simple gaseous 'plant growth regulating hormone'. [IPE]
13. The **inability** or delay of seed to **germinate** or grow is called **seed dormancy**. [IPE].
14. **Quiescence**: It is a delayed seed germination which occurs when a seed fails to germinate because the external environmental conditions are **too dry** or warm or cold for germination. [IPE]

FRUITY Qs OF IPE

1 x 4 = 4 Marks

1. Write a note on agricultural/horticultural applications of auxins.
2. Write the physiological responses of gibberellins in plants.
3. Write any four physiological effects of cytokinins in plants.
4. What are the physiological processes that are regulated by ethylene in plants.
5. Write short notes on seed dormancy.

SCENT BOXES- MEMORY HINTS

FOR SELECTIVE QUESTIONS

22. Write any four physiological effects of cytokinins in plants.

[TS 19][AP 16,17]

- A:**
- 1) Cytokinins are a class of plant growth hormones that promote cell divisions in roots & shoot tips.
 - 2) They help to produce new leaves, chloroplasts in leaves.
 - 3) They help in lateral shoot growth and adventitious shoot formation.
 - 4) They promote nutrient metabolism which helps the delay of leaf senescence.
 - 5) They help to overcome apical dominance. Thus they promote the growth of lateral branches and help in the bushy growth of the tree.
 - 6) Naturally Cytokinins are synthesised in places where rapid cell division occurs.

Ex: Root tips, shoot buds, young fruits.

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Cytokinins Beautify
Parks into Bushy

24. Write short notes on seed dormancy.

[TS 17,23]

- A:**
- 1) **Seed dormancy:** The inability or delay of seed to germinate or grow is called seed dormancy.
 - 2) It may be due to either external factors or internal factors.
 - 3) Dormancy may be due to hard seed coat which prevents the uptake of water or oxygen.
 - 4) Certain seeds like tomato contain chemicals like lycopane which inhibit germination.
 - 5) Many seeds like polygonum will not germinate for weeks and months until they are exposed to low temperatures in moist conditions.
 - 6) The dormancy of such seeds can be lifted by stratification or prechilling treatment.
 - 7) The practice of layering the seeds in moist sand and peat during winter is called stratification

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My Tomato and
Polygonum Seeds
did not germinate.
Then My Friend
Suggested Stratification
(or) Prechilling Treatment