



B. Sc. (Botany) SEMESTER-V

Paper-I

(Plant Physiology, Mineral Nutrition and Hydroponics)

UNIT-I

Water relation: Concept and significance of Imbibition,

Diffusion,

<https://youtu.be/2EP5rhitZxE?si=Tsr8GRcP50Qy57Wo>

Osmosis

<https://youtu.be/iljEsVhw6k4?si=CCgGfW0i9MkPs2OK>

https://youtu.be/u_WgTNVuTKQ

<https://youtu.be/SrmBgdTEcjk>

Osmosis, Osmotic pressure

<https://youtu.be/q8RuX5uHjA0>

<https://youtu.be/SrmBgdTEcjk>

DPD

<https://youtu.be/-pgoTTPsrAA>

<https://youtu.be/-pgoTTPsrAA?si=YMeOZYbyBWkOUNc9>

Plasmolysis

https://youtu.be/EOk83i_Sr1s

Ascent of sap

<https://youtu.be/9R42YTIUK3A?si=W8mcc5sTu2ukQxSI>

Root pressure theory

<https://youtu.be/9R42YTIUK3A?si=ixdX-tWWxvZMkjCb>

<https://youtu.be/7ek9QCK-c1g?si=Y2mJfxYgxRNikZeC>

Cohesion-adhesion theory

<https://youtu.be/7JRzXRSTFt0?si=x41zl3wp4vYTCO0o>

Transpiration

https://youtu.be/E9vwnNegZ4k?si=sqeOr0oRiwrior_P

Mechanism of Stomatal movements (K⁺ Malate Hypothesis)



<https://youtu.be/xNrHi8LJCuU?si=YEo071C5WkTSLcNm>

<https://www.youtube.com/live/TiF0lz7NkMM?si=JkRq7380EPHllcfc>

Phloem transport

<https://youtu.be/rO-owfxDYLY?si=IN3mdAg3N8JEY2Yw>

Munch Hypothesis

<https://youtu.be/bXctTs-saSo?si=B96hmwMaw7wfiMzL>

<https://youtu.be/rO-owfxDYLY?si=IN3mdAg3N8JEY2Yw>

Mineral uptake

Passive (Donnan's Equilibrium),

https://youtu.be/YgaN7f3AUDM?si=Hnz2b9_a9IGWKcn6

<https://youtu.be/RHIHThIu-3U?si=OdwMn2AXGepXysFK>

Active (Carrier Concept)

https://youtu.be/YgaN7f3AUDM?si=Hnz2b9_a9IGWKcn6

<https://youtu.be/pQMwqPO-2ac?si=7l3pzTjo9gso8tJY>

UNIT-II

Photosynthesis and Respiration:

Photosynthesis

<https://youtu.be/4Ix8XrKJqe8?si=hFEqAC5lkNWIWbHO>

Photosynthetic pigments (Type and role). Photosystems

<https://youtu.be/xX2ygiG5ykU?si=qRjngWtNHFX6eZXj>

Mechanism of photosynthesis

Cyclic and non- cyclic photophosphorylation

<https://youtu.be/qx-W29Nr8po?si=ih75jRdZORG4RqCe>

Calvin Cycle (C3)

<https://youtu.be/fCWecoR6qfs?si=-559Iy9QSeJLXi5->

HSK pathway (C4)

https://youtu.be/Ojb8ksQ6zRM?si=o2gD6ZOTu-SB9n_W

CAM pathway.



<https://youtu.be/Zj9Zw8JbFAI?si=SVNIF6ZhsMCWOE1->

Respiration

<https://youtu.be/hHQ7PXLdsc0?si=VbO8lIt7xTkj39-i>

https://youtu.be/Cs_MtpdXX9E?si=KUQrAUHlu4-QaHR

Respiratory Quotient (RQ)

https://youtu.be/iFD6mod27zo?si=K_LiDLYzD_oEmZUv

Mechanism of respiration:

Glycolysis

https://youtu.be/KzI_jUfK5Pw?si=PReOkaaPIXEBTtXD

Kreb's Cycle

<https://youtu.be/RE78TRseSEs?si=WNkIGBDo7p1nvqMy>

Oxidative phosphorylation (ETS)

<https://youtu.be/1y-6Ghq8TVM?si=lcjd65oBcPB6Bulj>

Fermentation:

Definition, Types, Mechanism of fermentation: Lactic acid and Alcoholic

https://youtu.be/UCZwWC1neXw?si=ssXZ_qjERhO3XhUa

<https://youtu.be/wrVw-mXC2pk?si=xmKwgqBz8AZ4il2Q>

https://youtu.be/Cs_MtpdXX9E?si=Y8Qyh4zJfZKhDem

UNIT-III

N- Fixation, Plant Movements, Photoperiodism:

Nitrogen Metabolism:

<https://youtu.be/nIt-1BLhNBY?si=HF3gPDtn9Crduv9>

Mechanism of Biological N-Fixation (Symbiotic and Non-symbiotic)

https://youtu.be/BTb55P4P4IM?si=L5blShJpm_PaSJko

Plant Movements:

Outline

<https://youtu.be/yloBjwvmZbA?si=N8vza-P8zMoS9rsh>

Tropic (Geotropic, Phototropic, Thigmotropic) and Nastic (Seismonastic)

https://youtu.be/UF2DydE2m_Q?si=intlp1HcDE8-6vKz



Photoperiodism:

Classification (Short Day Plant, Lang Day Plant and Day Neutral Plant)

<https://youtu.be/Exp4i7PjTE4?si=2gNz0KGeg0LL7jTj>

Photoperiodic induction

https://youtu.be/gdIDe6AYryA?si=qm-sMTPz5RrP4_p9

Florigen hormone

<https://youtu.be/YUfPjqrLo0s?si=mfQq-4c8SmFyWO-t>

Circadian rhythms and Biological clock

<https://youtu.be/gvMUe40qp0s?si=DxVjiDNEHxTArn-->

UNIT-IV

Skill Development: Mineral nutrition and Hydroponics:

Mineral nutrition:

Definition, survey, types (Macro and micro nutrients)

https://youtu.be/y_U9hM0QXwM?si=viujgNHV2G8MhasH

Role and deficiency symptoms of Macronutrients:

Nitrogen, Phosphorous, Potassium and Calcium

https://youtu.be/y_U9hM0QXwM?si=viujgNHV2G8MhasH

Role and deficiency symptoms of Micronutrients:

iron, Manganese, boron and Zink

https://youtu.be/y_U9hM0QXwM?si=viujgNHV2G8MhasH

Hydroponics:

https://youtu.be/5AkXl4aD7aU?si=zZROqGoc2R_QBQvT

Definition, advantages and disadvantages

https://youtu.be/i6SBmXqGRPY?si=B-sE85X7k_XiFA4v

Types of hydroponic systems

<https://youtu.be/o5sr5BaIyTg?si=l2xaEOcFu6fTQ3WO>

Deep water culture

<https://youtu.be/i3-9u-HtFG8?si=EKeOrkSzBnwk1qIN>