

**JYOTI NIVAS COLLEGE AUTONOMOUS
SYLLABUS FOR 2018 BATCH AND THEREAFTER**

Programme: B.Sc.

Semester: VI

BOTANY PAPER VIII

PLANT PHYSIOLOGY II

Course Code: 18VIBO8

No. of Hours: 45

COURSE OBJECTIVES:

- Know scope and importance of plant physiology.
- To Understand process of photosynthesis, C₃, C₄, CAM pathways.
- To Understand the process of respiration, growth and developmental process in plant.

LEARNING OUTCOMES:

- Critically understand the light reactions and carbon assimilation processes responsible for synthesis of food in plants.
- Evaluate the physiological factors that regulate growth and development in plants.
- Examine the role of light on flowering and explain physiology of plants under stress conditions.

UNIT I Nitrogen metabolism

10 HRS

Biological nitrogen fixation – symbiotic and asymbiotic, nitrate metabolism. Synthesis of amino acids, Transamination and reductive amination. A brief mention of Nitrogen cycle.

Enzymes - Nomenclature, classification, structure and composition.

Mechanism of enzyme action – Lock and Key model and Induced fit theory.

Enzyme kinetics and factors affecting enzyme activity, Industrial application of Enzymes (In brief).

UNIT II Photosynthesis

11 HRS

Introduction (brief) and photosynthetic apparatus (Ultra structure of Chloroplast, mention of tetra pyrrole ring structure of chlorophyll molecule). visible spectrum, quantosome, quantum yield, Red drop & Emerson enhancement effect, Photosystems I & II, photophosphorylation (Cyclic and Non – cyclic), Calvin cycle, C₄ pathway, CAM pathway, Photorespiration (C₂ pathway)- mechanism and significance. Factors affecting photosynthesis.

UNIT III Respiration

9 HRS

Introduction and ultrastructure of mitochondrion. Respiratory Quotient and its significance.

BOTANY PRACTICAL – VIII

1. Separation of Photosynthetic pigments by paper chromatography and measurement of Rf values.
2. Determination of rate of photosynthesis at different wavelengths of light.
3. Determination of rate of photosynthesis at various concentrations of CO₂.
4. Determination of RQ of carbohydrates, fats and proteins.
5. Study of Anaerobic respiration using Kuhne's fermentation flask.
6. Determination of Ascorbic acid content in the plant material.
7. Effect of phytohormones – Leaf senescence, initiation of axillary bud (potato), seed germination (green gram),
8. Plant movements – Geo, Hydro & phototropism

ACTIVITY FOR VISEMESTER: Project work