

Syllabus

B.Sc. (General) Sixth Semester (Examination December, 2016)

UNIT-I

Photosynthesis : Significance, historical aspect; photosynthetic pigments; action spectra and enhancement effects; concept of two photosystems, cyclic and non-cyclic photophosphorylation; Calvin cycle; C4 pathway; CAM plants; photorespiration; factors affecting photosynthesis; transport of organic substances; Mechanism of phloem transport, source-sink relationship, factors affecting translocation.

UNIT-II

Respiration : ATP — The biological energy currency; aerobic and anaerobic respiration; Krebs cycle; electron transport mechanism (Chemi-osmotic theory); redox potential; oxidative phosphorylation; pentose phosphate pathway; respiratory quotient.

UNIT-III

Growth and development : Definitions; phases of growth and development; kinetics of growth, factors affecting growth; plant movements; the concept of photoperiodism, physiology of flowering; florigen concept; roles of plant hormones— auxins, gibberellins, cytokinins, abscisic acid and ethylene, history of their discovery.

UNIT-IV

Biotechnology : Functional definition; basic aspects of plant tissue culture, its applications and somatic hybridization.

PRACTICAL

1. To demonstrate that chlorophyll is necessary for photosynthesis.
2. To demonstrate that light is necessary for photosynthesis.
3. To demonstrate that CO₂ is essential for photosynthesis.
4. To demonstrate evolution of oxygen during photosynthesis in an aquatic plant.
5. To study the effect of light intensity and CO₂ concentration on the rate of photosynthesis using an aquatic plant.
6. To demonstrate aerobic respiration using flask method.
7. To demonstrate anaerobic respiration in germinating seeds or yeast.
8. To demonstrate the activity of amylase.
9. To demonstrate the activity of catalase in plant tissue (germinating seeds).
10. To demonstrate phototropism.
11. To demonstrate geotropism using clinostat.
12. To test for the presence of starch, proteins, amino acids and reducing sugars in plant material.