

**3204**  
**THIRD YEAR B.Sc. Botany**

**PLANT PHYSIOLOGY AND BIOCHEMISTRY**

**Unit-1**

Different models of cell membrane to explain structure and function; water relations – osmosis, diffusion, diffusion pressure deficit (DPD), turgor pressure, wall pressure; concept of water potential. Mechanism and factors affecting transpiration, role of macro and micro elements, carrier concept of ion absorption.

**-10 hours**

**Unit-2**

Photosynthesis - photosynthetic pigments; light absorption and mechanism of carbon fixation, C<sub>3</sub> and C<sub>4</sub> plants. Brief account of CAM, photorespiration, CO<sub>2</sub> compensation point. Factors affecting photosynthesis. Enzymes : general characteristics, traditional and modern methods of enzyme classification, mode of action. Isozymes.

**-10 hours**

**Unit-3**

Respiration - glycolysis, Krebs cycle, electron transport system and oxidative phosphorylation, factors affecting respiration. Synthesis and degradation of fatty acids.

**-10 hours**

**Unit-4**

Plant Growth Regulators : auxins, gibberellins, cytokinins, ethylene and abscisic acid, their physiological effects and application in agriculture and horticulture; Seed dormancy, senescence, photoperiodism and vernalization.

**-10 hours**

**Unit-5**

Principles and use of following techniques : pH metry, centrifugation, colorimetry, chromatography. Microscopy: light and compound; scanning electron microscopy.

**-10 hours**

**Note:**

The paper setter is required to set questions of 3 types contained in 3 Sections (**Section A**- 10 questions, **Section B**- 10 questions and **Section C**- 4 questions) from the 5 units of each paper. There will be 10 questions in **Section A** which will be asked from all the 5 units, i.e., 2 questions from each unit. These questions have to be answered in one word or a few words only. Each question will be of half mark. All the questions in **Section A** are compulsory. In **Section B**, 10 questions will be set from the 5 units, i.e., 2 questions

from each unit. Students are required to attempt at least 1 question from each unit. Each question will carry 5 marks. The answers of each question should be given in about 250 words. In **Section C** there will be 4 descriptive type questions set from all the 5 units, not more than 1 question from each unit. These questions may also have sub-divisions. The students are required to answer 2 questions, each in approximately 500 words. Each question will carry 10 marks.

In short, pattern of question paper and distribution of marks for UG classes will be as under:

- **Section A:** 10 questions, 2 questions from each unit, short answer, all questions compulsory. Total marks : **05**
- **Section B:** 10 questions, 2 question from each unit, 5 question to be attempted, at least 1 from each unit, answer approximately in 250 words. Total marks : **25**
- **Section C:** 04 questions (question may have sub-division), not more than 1 question from each unit, descriptive type, answer in about 500 words, 2 questions to be attempted. Total marks : **20**