

GONDWANA UNIVERSITY
GADCHIROLI

SEMESTER SYSTEM PATTERN SYLLABUS

for

B.Sc.
BOTANY

SEMESTER – VI

(With effect from : 2014-15)

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SEMESTER SYSTEM PATTERN SYLLABUS

FOR

B.Sc. BOTANY

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B.SC.

SEMESTER –VI :	Paper – I: Plant Physiology, Growth and development	50 marks
	Paper – II: Ethnobotany and Applied Botany	50 marks
	Practical – II: Based on Paper – I & II of Semester –VI	30 marks
	Internal Assessment: Based on Assignment/Seminar & Unit Test	20 marks

B.Sc.

BOTANY

SEMESTER – VI

Paper – I

Plant Physiology, Growth and development

UNIT- I :

Photosynthesis: Photosynthetic pigments, action spectra, Red drop and Emerson enhancement effect, cyclic and non-cyclic photophosphorylation, C₃, C₄ and CAM pathway, factors affecting photosynthesis.

UNIT- II :

Respiration: Structure of ATP, aerobic and anaerobic respiration, respiratory substrates and R. Q., glycolysis, citric acid cycle, ETS, oxidative phosphorylation, factors affecting respiration

UNIT- III :

Growth and development: Definition, phases of growth and development.

Plant growth regulators: Introduction and Role of auxin, cytokinins, gibberilins, ABA and ethylene

Plant movements: Tropic and nastic movements

UNIT- IV :

Photoperiodism: Concept, Short-day plant, Long-day plants, Day-neutral plants.

Physiology of flowering : role of florigen, vernalization.

Phytochromes : Pr and Pfr forms, circadian rhythms and biological clock

Senescence and abscission : Definition and general account

Seed dormancy: Causes and role, methods to break seed dormancy

SEM –VI

Paper – I

Plant Physiology, Growth and development

Suggested Laboratory Exercises

Plant Physiology Experiments : (Any Six)

1. To demonstrate that the light is necessary for photosynthesis (Ganong's light screen)
2. To demonstrate that the light, chlorophyll and CO₂ is necessary for photosynthesis (By Moll's half leaf experiment)
3. To demonstrate fermentation by Kuhne's tube
4. To demonstrate aerobic respiration
5. To demonstrate the evolution of CO₂ in respiration
6. To demonstrate the part of energy is released in the form of heat during respiration
7. To separate chloroplast pigments by solvent method and preparation of their absorption spectra
8. To separate chloroplast pigments by paper chromatography
9. To measure rate of photosynthesis by Wilmott's bubbler/Simple bubbler under variable conditions of light, temperature and CO₂ concentrations.
10. To determine RQ of different respiratory substrates.

Plant Growth and Development Experiments : (Any Four)

1. To demonstrate seed viability test by T.T.C. (Triphenyl-Tetrazolium-chloride)
2. To demonstrate the phenomenon of nastic movement in *Mimosa pudica*/*Biophytumn sensitivum* plants.
3. To demonstrate the measurement of growth of germinating pea seeds
4. To demonstrate the phenomenon of gravitropism (geotropism), phototropism and hydrotropism
5. To demonstrate effect of auxin, cytokinin, GA, ABA and ethylene using appropriate plant materials.
6. To study the various methods of breaking seed dormancy.

B.Sc.
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SEMESTER – VI
Paper – II
Ethnobotany and Applied Botany

- UNIT-I :** **Ethno-Botany :**
Introduction, Definition, Concept & Relevance
Branches of Ethnobotany
Methodology and Importance of Ethnobotany in Research and Conservation
Ethnic societies of India and World & their contribution
- UNIT-II :** **Ethno-Botany :**
Plants of Ethnobotanical importance: classification of ethno botanical plants on the basis of their use.
Medicinal plants and narcotics (Name of plant, family and parts used- at least Five Plants)
Ethno-botanical Importance: Source of - vegetables, fruits and seeds
(Five each)
- UNIT-III :** **Applied Botany :**
Agroforestry: Introduction, useful plants for Agroforestry such as *Eucalyptus*, Teak, Bamboo, *Terminalia tomentosa*
Bio Fertilizers: Culture of Blue-Green alga, Spirulina
Composting: Introduction and methods
Vermiculture: Introduction, Vermicomposting and its Application.

UNIT-IV: Applied Botany :

Floriculture: Introduction and its Application.

Mushroom culture: Introduction and its Application

Apiculture: Introduction and its Application

SEM –VI

Paper – II

Ethnobotany and Applied Botany

Suggested Laboratory Exercises

Ethnobotany Experiments :

To study the locally available plants used by the natives for the ailments of various diseases. (any five)

1. Plant used to cure the arthritis
2. Plant used to cure the Piles
3. Plant used to cure the Jaundice
4. Plant used against snake bites
5. Plant used to cure the Diabetes
6. Plant used against Fever
7. Plant used against Scorpion/ insect bite

To study the methods of cultivation of medicinally important plants.

1. *Aloe vera* (Korphad)
2. *Chlorophytum borivillianum* (Safed Musli)
3. *Withania somnifera* (Ashwagandha)
4. *Asparagus* (Satavari)
5. *Adhatoda vasica* (Adulsa)

Applied Botany Experiments: (Any Four, One from each category is compulsory)

Vermiculture:

1. To study and demonstrate Vermicomposting technique.

2. To study the construction of Vermicomposting unit.

Floriculture:

3. To study and demonstrate Floriculture technique.
4. To study the cultivation practices of commercially important flowers. (any four)
5. To study the construction of Green House Unit.

Mushroom culture:

6. To study and demonstrate Mushroom culture technique.
7. To study the construction of Mushroom culture unit.

Apiculture:

8. To study and demonstrate Apiculture technique.
9. To study the construction of Apiculture unit.

Note: Frequent Field visits are necessary

Schedule for Practical Examination

SEMESTER – VI

Time: 5 Hours

Max. Marks: 30

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| Q. 1 To Perform given Physiology Experiment [A] & report the findings | 05 Marks |
| Q. 2 To perform the given Experiment [B] on plant growth and development & report the findings | 04 Marks |
| Q. 3 Comment and note on ethno medicinal uses of given plants [C] | 05 Marks |
| Q. 4 Comment and note on Experiment [D] on applied aspects of Botany | 04 Marks |
| Q. 5 Spotting :
E - Plant Physiology | 04 Marks |

F - Growth and development

G - Ethnobotany

H – Applied Botany

Q. 6 Viva - Voce

03 Marks

Q. 7 Practical Record & Excursion Report

05 Marks
