

MARWARI COLLEGE, RANCHI
(AN AUTONOMOUS UNIT OF RANCHI UNIVERSITY FROM 2009)



DEPARTMENT OF BOTANY

COURSES OF STUDY FOR BOTANY SUBSIDIARY

Number of Papers: 8

(4 Theory papers & 4 Practical Papers)

Full Marks: 400

Theory: 300, Practical: 100

Number of Semesters: 4

B. Sc. Part - I: 200 Marks

(Theory: 150, Practical: 50)

B. Sc. Part - II: 200 Marks

(Theory: 150, Practical: 50)

DISTRIBUTION OF MARKS IN BOTANY SUBSIDIARY

SEMESTER	THEORY PAPER	PAPER NAME	FULL MARKS	PASS MARKS	DURATION
I	1	Microbiology & Atracheophyta	75	23	3 Hrs.
	2	Practical	25	10	3 Hrs.
II	3	Tracehophyta & Anatomy/ Embryology	75	23	3 Hrs.
	4	Practical	25	10	3 Hrs.
III	5	Plant Physiology/ Biochemistry and Environmental Biology	75	23	3 Hrs.
	6	Practical	25	10	3 Hrs.
IV	7	Cytogenatics/ Molecular Biology/ Biotechnology and Economic Botany	75	23	3 Hrs.
	8	Practical	25	10	3 Hrs.

PART-I**SEMESTER – I****Paper -1, Microbiology & Atracheophyta [35 classes]**

Instructions to Paper Setters

Full Marks: 75

Paper setters shall set questions in three groups.

Group A. Shall contain multiple choice questions, fill in the blanks and true / false type questions – Twenty questions of one mark each (20 x 1 = 20)

Group B. Shall contain concept based questions – Five questions of two marks each (5 x 2 = 10)

Group C. Long answer questions – Three questions of fifteen marks each (3 x 15 = 45)

Altogether 5 questions have to be answered, where Groups A and B shall be compulsory.

Full Marks: 75

Time: 3 Hrs.

Pass Marks: 25

Group A- Microbiology

1. General account & structure of bacteria, cyanobacteria & their economic importance
2. Viruses: General account & economic importance
3. Mycoplasma and its importance

Group B- Atracheophyta

1. Structure, reproduction, diagnostic features & economic importance of: ALGAE- Nostoc, Volvox, Oedogonium, Chara, Vaucheria, Sargassum, Batrachospermum
FUNGI- Albugo, Peziza, Puccinia, Agaricus and Alternaria
2. General account & economic importance of Lichens and following bryophytes-
Marchantia, Anthoceros, Sphagnum

Book Recommended:

1. A Text Book of Botany – Vol. – I Thaelophyta (Alage, Fungi and bacteria) -by Arjun Kishore Saxena and Ramesh Prasad
2. An Introduction to Microbiology- P Tauro, K. K. Kapoor K. S. Yadav
3. Botany For Degree Student – by A. C. Dutta.
4. A Text book of Botany – vol II(Bryophytes, Pteridophytes and Gamnosper) – By A. K. Saxena and R. P. Sarbhai

PART-I
SEMESTER – I
Paper -2, P R A C T I C A L

Full Marks: 25

Time: 3 hrs.

Pass Marks: 10

1. Morphology and structural details of any two of the cryptogams prescribed in the syllabus in order to identify them (Algae, Fungi) 4 x 2 = 8
2. Anatomical preparation of Bryophyta 5
3. Spotting 1 to 5 5
4. Class records, Viva, field report, Herbarium, collection, etc 7

PART-I
SEMESTER – II
Paper -4, P R A C T I C A L

Full Marks: 25

Time: 3 hrs.

Pass Marks: 10

- | | |
|--|---|
| 1. Family description of Plant | 8 |
| 2. Anatomical Preparation | 5 |
| 3. Spotting 1 to 5 | 5 |
| 4. Class records, Viva, field report, Herbarium, collection, etc | 7 |

PART-II
SEMESTER – III

Paper -5, Plant Physiology, Biochemistry and Environmental Biology [40 classes]

Instructions to Paper Setters

Full Marks: 75

Paper setters shall set questions in three groups.

Group A. Shall contain multiple choice questions, fill in the blanks and true / false type questions – Twenty questions of one mark each (20 x 1 = 20)

Group B. Shall contain concept based questions – Five questions of two marks each (5 x 2 = 10)

Group C. Long answer questions – Three questions of fifteen marks each (3 x 15 = 45)
Altogether 5 questions have to be answered, where Groups A and B shall be compulsory.

Full Marks: 75

Time: 3 Hrs.

Pass Marks: 25

Group A- (Plant Physiology & Biochemistry)

1. Physiology of water and mineral absorption
2. Enzyme: Nature, mode of action, factor affecting enzyme activity.
3. Photosynthesis: Mechanism and factors.
4. Respiration: Mechanism and electron transport system
5. Physiology of flowering: Photoperiodism & Vernalization
6. Phytohormones: auxins, cytokinins and gibberellins and their roles.
7. Growth and development: Kinetics of growth, dormancy, seed germination, plant movements.

Group B: Environmental Biology

1. Introduction of ecology and its scope
2. Ecological factors
3. Plant communities and ecosystem
4. Succession: hydrosere & Xerosere
5. Pollution: Water, Soil, Air, Sound.

Book Recommended:

1. Botany for Degree Students - By A. C. Dutta.
2. Plant physiology – By S. C. Datta
3. Plant physiology – By S. Mukharjee
4. Environmental Biology – By Sharma

PART-II
SEMESTER – III
Paper - 6, P R A C T I C A L

Full Marks: 25

Time: 3 hrs.

Pass Marks: 10

- | | |
|---|---|
| 1. Perform experiment in plant Physiology | 8 |
| a) rate of imbibition of starchy & oily seeds | |
| b) rate of transpiration by Farmer's/Gannog's photometer | |
| c) Determination of DPD by plasmolytic method | |
| 2. Density frequency by quadrat method | 5 |
| 3. Spotting 1 to 5 | 5 |
| 4. Viva Voce, Class records/field study report/collections etc. | 7 |

PART-II
SEMESTER – IV

Paper -7, Cytogenetics, Molecular Biology, Biotechnology and Economic Botany [35 classes]

Instructions to Paper Setters

Full Marks: 75

Paper setters shall set questions in three groups.

Group A. Shall contain multiple choice questions, fill in the blanks and true / false type questions – Twenty questions of one mark each (20 x 1 = 20)

Group B. Shall contain concept based questions – Five questions of two marks each (5 x 2 = 10)

Group C. Long answer questions – Three questions of fifteen marks each (3 x 15 = 45)
Altogether 5 questions have to be answered, where Groups A and B shall be compulsory.

Full Marks: 75

Time: 3 Hrs.

Pass Marks: 25

Group A: Cytogenetics, Molecular Biology & Biotechnology

1. Structure of cell, cell organelles; Mitochondria, Chloroplast, Centrosome
2. Mitosis & Meiosis
3. Mendelism
4. Structure and organization of chromosome
5. Mutation
6. Polyploidy
7. Genetic Engineering: Tools & Techniques of recombinant DNA technology, Cloning vectors, Techniques of gene mapping and chromosome walking
8. Biotechnology: Functional definition, basic aspects of plant tissue culture, cellular totipotency, differentiation and morphogenesis, biology of Agrobacterium, vectors for gene delivery and marker gene, salient achievements in crop biotechnology.

Group B: Economic Botany

1. Forest wealth of Jharkhand with special reference to timber and medicine yielding plants.
2. Agricultural and horticultural plants with special reference to pulses and oil seeds.

Book Recommended:

1. Cell Biology – C. B. Pauer
2. Biotechnology – By P. K. Gupata
3. Economic botany – By B. P. Pandey
4. Cell Biology – By S.C. Rastogi
5. Cytogenetic, Plant Breeding and evolution – By U. Sinha / Sunita Sinha

PART-II
SEMESTER – IV
Paper - 8, P R A C T I C A L

Full Marks: 25

Time: 3 hrs.

Pass Marks: 10

- | | |
|---|---|
| 1. Embryo Dissection | 6 |
| 2. Mitotic Studies two stage | 7 |
| 3. Spotting (1 – 5) | 5 |
| 4. Viva Voce Class records/field study report/collections etc | 7 |