



**RAJARSHI SHAHU MAHAVIDYALAYA, LATUR
(AUTONOMOUS)**

AFFILIATED TO

**SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY,
NANDED**

B. Sc. GENERAL (SEMESTER PATTERN)

B. Sc. SECOND YEAR (CBCS)

BOTANY – CURRICULUM

w. e. f. JUNE, 2022

Rajarshi Shahu Mahavidyalaya (Autonomous), Latur

B. Sc. General (Semester Pattern)

B. Sc. Second Year (CBCS)

Botany – Curriculum

Semester	Paper No.	Paper Title	Course Code	Marks		Total Marks	Lectures/Practicals	Credits
				In Sem. Evaluation	End Sem. Evaluation			
III	CC-V	Morphology and Taxonomy of Angiosperms	U-BOT-367	20	30	50	45	02
	CC-VI	Economic Botany and Pharmacognosy	U-BOT-368	20	30	50	45	02
	Lab. Course III	Based on CC-V	U-BOT-369	20	30	50	15	02
	Lab. Course IV	Based on CC-VI	U-BOT-370	20	30	50	15	02
	SEC-I	Nursery and Floriculture	U-ADC334N	20	30	50	45	02
IV	CC-VII	Environmental Biology; Gardening and Land Scaping	U-BOT-467	20	30	50	45	02
	CC-VIII	Plant Breeding and Biotechnology	U-BOT-468	20	30	50	45	02
	Lab. Course V	Based on CC-VII	U-BOT-469	20	30	50	15	02
	Lab. Course VI	Based on CC-VIII	U-BOT-470	20	30	50	15	02
	SEC-II	Mushroom Cultivation Techniques	U-ADC 434M	20	30	50	45	02
				Total	500		20	

Workload:

1. Theory: Three Lectures / Paper / Week.

2. Practical: One practical (Three Lectures) / Batch / Week

RAJARSHI SHAHU MAHAVIDYALAYA (AUTONOMOUS), LATUR

B. Sc. Second Year Semester – III

BOTANY

CC-V: Morphology and Taxonomy of Angiosperms

Lectures – 45 Maximum Marks – 50 Credits:02 Course Code: U BOT- 367

Objectives: The student will be able to:

1. Describe the function of classification.
2. Distinguish between taxonomy and Systematics and be able to identify a classification as systematic or taxonomic.
3. Describe the reasons for preferring natural classifications over artificial classifications.
4. Describe the reason that classical taxonomy is a hierarchical scheme of classification.
5. Describe the role that key characteristics play in taxonomy.
6. Describe why consistency is both valuable for taxonomy and hard to achieve.
7. Relate the reason that botanical taxonomy uses "division", rather than "phylum" as the hierarchical level below that of kingdom and above that of class.
8. Define different taxonomic terms.

Course outcomes:

- 1) Students are able to distinguish between taxonomy and systematic.
- 2) Able to correlate the reason that botanical Taxonomy study as hierarchical level.
- 3) Able to describe the reasons for performing natural classification over artificial classification.

Unit-I: Morphology of Angiosperms-I (10 L):

1. Root: Definition, characters, types (taproot and adventitious) and functions.
2. Stem: Definition, characters, modifications (stem tendril, runner, and rhizome) and functions.
3. Leaf: Definition, structure of typical leaf (Hibiscus), Types of leaf apex and Margin, Types, Phyllotaxy and Venation, Functions.

Unit-II Morphology of Angiosperms-II (10 L):

1. Inflorescence: Definition, structure of typical inflorescence Types- Solitary, Racemose and Cymose.
2. Flower: Definition, structure of typical flower (Hibiscus), symmetry and types (hypogynous, epigynous, perigynous).
3. Fruit: Definition and its Types.

Unit-III: Taxonomy of Angiosperms (12 L):

1. Introduction,
2. Scope and objectives of angiosperm taxonomy.
3. Binomial nomenclature,
4. Chemotaxonomy and Cytotaxonomy.
5. Taxonomic ranks.
6. Types of classification (Artificial, Natural and Phylogenetic)
7. Bentham & Hooker's system of classification with merits and demerits.

Unit-IV: Study of families (13 L):

Distribution, vegetative morphology (habitat, habit, root, stem, leaf), Reproductive morphology (inflorescence, flower, pollination, fruit) Floral Formula, Floral Diagram, Systematic position (as per Bentham & Hooker system) Distinguishing characters and Economic importance of plants (at least two) of the following families:

1. Brassicaceae.
2. Fabaceae.
3. Solanaceae.
4. Lamiaceae.
5. Euphorbiaceae.
6. Poaceae.

SUGGESTED READINGS:

- | | |
|-----------------------------------------|------------------------------|
| 1. A Text Book of Systematic Botany | Sutaria R N |
| 2. Taxonomy of Angiosperms | Pandey S N and Mishra S D |
| 3. Taxonomy of Angiosperms | Sambamurthy A V S |
| 4. Taxonomy of Angiosperms | Vashishta P C |
| 5. Modern Plant Taxonomy | Subramanyam N S |
| 6. Principles of Angiosperms Taxonomy | Davis P. H. and Heywood V.H. |
| 7. Angiosperms | Chopra G.L |
| 8. Taxonomy of Angiosperms | Kumarsen Annie |
| 9. Introductory Taxonomy of Angiosperms | S.SundaraRajan |

RAJARSHI SHAHU MAHAVIDYALAYA (AUTONOMOUS), LATUR

B. Sc. Second Year Semester – III

BOTANY

CC-VI Economic Botany and Pharmacognosy

Lectures – 45 Maximum Marks – 50 Credits:02 Course Code: U BOT-368

Objectives:

1. Acquire good knowledge about economic importance of cereals, pulses, oilseed crops.
2. Acquire good knowledge about chemistry of active constituents of medicinal plants.
3. Know methods of isolation of active constituents of medicinal plants.
4. Identify and estimate of active constituents of medicinal plants.

Course outcomes:

- 1) Students acquired good knowledge about economic importance of cereals, pulses crops.
 - 2) Able to identify and estimate active constituents of medicinal plants.
 - 3) They are able to analyze active constituents of Medicinal plants.
-

Unit-I: Economic Botany -I (10 L):

Introduction:

Botanical name, family, distinguishing characters (at least two), method of cultivation and economic importance of the following-

1.Cereals (Wheat).

2. Pulses (Pigeon pea).
3. Fiber yielding plants (Cotton).
4. Cotton processing.
5. Rubber production.

Unit-II: Economic Botany-II (10 L):

Botanical name, family, distinguishing characters (at least two), method of cultivation and economic importance of the following-

1.Oil yielding plants (Soybean, Sunflower)

2. Soya milk production.
3. Starch processing.
4. Timber yielding plants (Teak, Neem).
5. Medicinal plants (Aloe, Withania).

Unit-III: Introduction to Pharmacognosy (11L)

1. History, definition and scope of Pharmacognosy
2. Traditional and alternative systems of medicine (3. Indigenous systems of Medicine (Ayurveda, Siddha, Unani).
3. Classification of crude drugs.
4. Concept of active principle (Five examples)

Unit-IV: Ayurvedic Pharmacy (14L)

1. Introduction
2. Tridosha concept.
3. Ayurvedic principles- Ras, Guna, Vipaka, Virya, Prabhava.
4. Ayurvedic formulations – Asava, Arishta, Kvatha, Churna, Ksharas, Leha, Vatika, Taila, Bhasma.
5. Drug adulteration.
6. Study of drugs w.r.t. occurrence, distribution, morphological characters, Constituents and uses of *Adhatoda* (Leaf drug)

SUGGESTED READINGS:

- | | |
|---------------------------------|-----------------------------------------------|
| 1. Economic Botany | Pandey B. P (1987) |
| 2. Text book of Economic Botany | Verma V. (1984) |
| 3. Economic Botany, | Hill A.W (1981) |
| 4. Economic Botany. | Albert, F.H. . |
| 5. Economic Botany | Hill, A.F |
| 6. Pharmacognosy | Trease and Evans |
| 5. Pharmacognosy | Shah and Qadry |
| 7. A Text Book of Pharmacognosy | Ghani A. |
| 8. Text book of Pharmacognosy | M. Ali. |
| 9. Practical Pharmacognosy | Kokate C.K., |
| 10. Pharmacognosy | Kokate C.K. Purohit A.P. and Gokhale S.B. |
| 11. Pharmacognosy | Trease G.E. and Evans. W.C. · Tyler V.E Brady |
| 12. Bhaishyajakalpana | Vaidya S.S. and Dole.V.A |
| 13. Text book of pharmacognosy | Wallis,T.E. |

SKILL ENHANCEMENT COURSE -I
PAPER I: MUSHROOM CULTIVATION TECHNIQUES (SEC)

Lectures – 45 Maximum Marks – 50 Credits:02 Course Code: U -ADC 334M

SSSSSS

Objectives:

1. The courses aim at developing skills and making the students become self-reliable and employable besides giving them an edge when they seek employment in other Government and private sectors.
2. When students pass out of the college with their degrees, they also are equipped with additional skills to meet the challenges in future.

Course Outcome:

1. Students are able to cultivate mushroom in house.
 2. Students are able to know nutritional and medicinal value of mushroom
-

Unit: I Cultivation System & Farm design:

Fundamentals of cultivation system- small village unit & larger commercial unit.

Principles of mushroom farm layout- location of building plot, design of farm, bulk chamber, composting platform, equipment's& facilities, pasteurization room & growing rooms.

Unit: II Composting, Spawn & Spawning:

Principles of composting, machinery required for compost making, materials for compost preparation. Methods of Composting- Long method of composting (LMC) & Short method of composting (SMC).

Unit: III Casting materials & Case running:

Importance of casing mixture, Quality parameters of casing soil, different types of casing mixtures, commonly used materials.

Unit: IV Cultivation of Button, Oyster and Straw Mushrooms:

Collection of raw materials, compost & composting, spawn & spawning, casing & case run, cropping & crop management, picking & packing. Visit to relevant Labs/Field Visits

Practicals

1. Oyster cultivation and demonstration of Button mushroom cultivation
2. Tissue isolation, Sub culturing, Spawn making and fruiting bags production, Processing.
3. Field trip to commercial mushroom farms and scientific institutions.

Text Book:

1. Mushroom Cultivation, Tripathi, D.P.(2005) Oxford & IBH Publishing Co. PVT.LTD, New Delhi.
2. Mushroom Production and Processing Technology, Pathak Yadav Gour (2010) Published by Agrobios (India).
3. A hand book of edible mushroom, S.Kannaiyan&K.Ramasamy (1980). Today & Tomorrows printers & publishers, New Delhi
4. Handbook on Mushrooms, Nita Bahl, oxford & IBH Publishing Co.

RAJARSHI SHAHU MAHAVIDYALAYA (AUTONOMOUS), LATUR
B. Sc. Second Year
Semester – III
BOTANY
Lab. Course-III
(Based on CC – V)

Lectures – 36 Maximum Marks – 50 Credits:02 Course code: U BOT-369

Course outcomes

- 1)Students identify the different types of roots and its modification.
 - 2)Students able to identify different forms of stem of plants.
 - 3)Students stand to identify the leaf type, Leaf venation, flower etc.
-

Practical 1: Study of Root and its modifications.

Practical 2: Study of Stem and its modifications.

Practical 3-4: Study of Leaf.

Practical 5: Study of Inflorescence.

Practical 6-7: Study of flower.

Practical 8-13: Description, identification and classification of the plants with floral formulae and floral diagrams of their families (mentioned in theory syllabus).

Practical 14-15: Botanical excursions (one long excursion =3 practicals).

RAJARSHI SHAHU MAHAVIDYALAYA (AUTONOMOUS), LATUR

B. Sc. Second Year Semester – III

BOTANY

Lab. Course-IV

(Based on CC - VI)

Lectures – 36 Maximum Marks – 50 Credits:02 Course code: U BOT-370

Course outcomes

- 1) Students easily distinguish between cereals and pulse crops.
 - 2) Students able to perform cultural practices in field.
 - 3) Students able to recognize different adulteration in food product.
 - 4) Students able to isolate the crude drugs of plants by different method.
-

Practical 1: Botanical name, family, distinguishing characters (at least two), method of cultivation and economic importance of Wheat and pigeon pea.

Practical 2: Botanical name, family, distinguishing characters (at least two), method of cultivation and economic importance of Soybean and Sunflower.

Practical 3: Botanical name, family, distinguishing characters (at least two), method of cultivation and economic importance of Cotton.

Practical 4: Botanical name, family, distinguishing characters (at least two), method of cultivation and economic importance of Neem and Teak.

Practical 5: Botanical name, family, distinguishing characters (at least two), method of cultivation and economic importance of *Aloe* and *Withania*.

Practical 6:- Histochemical tests of food storing tissue in pigeon pea, Wheat, lignin and cellulose.

Practical 07: Extraction of pectic substance.

Practical 08: Extraction of Tannin.

Practical 09-11: Preparation of Ayurvedic formulations (as per syllabus).

Practical 12: Botanical excursion.

N.B: 1) any ten Practicals

2) Several Short Excursions and At least one Long Excursion

RAJARSHI SHAHU MAHAVIDYALAYA (AUTONOMOUS), LATUR

B. Sc. Second Year Semester – IV

BOTANY

CC-VII Environmental Biology; Gardening and Land Scaping

Periods – 45 Maximum Marks – 50 Credits:02 Course code: U BOT-467

Objectives:

1. To provide an understanding for the fate and impact of pollution on “organic” life.
2. To characterize the biological impacts of toxins and contaminants on “organic life”.
3. To critically evaluate environmental topics in the media and the science behind these studies.
4. To learn an understanding of the methods of gardening.
5. To understand the technique potting.
6. To know aesthetic importance of garden.

Course outcomes:

- 1) Students are able to understand methods of gardening.
 - 2) Students are able to characterize the biological impacts of toxins and contaminants on organic life.
 - 3) Students are able to understanding for the fate and impact of pollution on organic life.
-

UNIT – I: ENVIRONMENTAL BIOLOGY-I (12 L)

1. Ecology – Definition and Scope
2. Structure of ecosystem (Abiotic and Biotic)
3. Types of ecosystem (Pond ecosystem and Forest ecosystem)
4. Ecological pyramids and energy flow
5. Food chain and Food web
6. Morphological and anatomical adaptations of plants to water stress conditions
 - i. Hydrophytes –Lotus leaf (petiole), Hydrilla.
 - ii. Xerophytes – *Nerium* leaf, *Casurina* stem.

UNIT – II: ENVIRONMENTAL BIOLOGY-II (10 L)

2. Pollution: Causes, effects and control measures of:
 - i. Water pollution,
 - ii. Soil pollution
 - iii. Air pollution
3. Afforestation and deforestation 3. Chipko movement

UNIT – III:GARDENING (13 L)

1. Scope and objectives of gardening.
2. Style of gardens: Formal, Informal.
3. Types of gardens: English, Mughal, Hindu-Buddhist and Japanese.
4. Components of garden.
5. Pots and container.
6. Essentials of pot culture.
7. Potting compost.
8. Potting.

UNIT – IV:LANDSCAPE DESIGNS (10 L)

1. Landscape Design: Definition, Landscape elements of construction.
2. Computer application in landscape.
3. Hedges for gardens & farms.
4. Lawns & Grasses: Planting methods, maintenance and pest management.
5. Development of flowerbeds and their designs.
6. Preparation of Bonsai and Flower Arrangement.

SUGGESTED READINGS:

- | | |
|------------------------------------|----------------------|
| 1. A text book of Plant Ecology | Ambasht R.S. |
| 2. Fundamentals of Ecology | Dash M.C. |
| 3. Ecology. | Michael S. |
| 4. Ecology and Environment | Sharma, P.D. |
| 5. Modern Concepts of Ecology | Kumar H.D. |
| 6.Fundamentals of Ecology | E.P. Odum |
| 7.Environmental Chemistry | A.K. De |
| 8.Environmental Biology | BiswarupMuhkerjee |
| 9.Modern Concepts of Ecology | H.D.Kumar |
| 10.Environmental Science | Turk and Turk |
| 11.Manual of Field Ecology | R. Mishra |
| 12.Plant Ecology | Ambhast |
| 13.Air Pollution Vol I | A.C. Stern |
| 14.Environmental Impact Assessment | Larry Canter, |
| 15.Environmental management | BiswarupMuhkerjee V. |
| 16.Pollution Biology: | Hyne |
| 17.Nursery and Landscaping | VeenaAmarnath |
| 18. Indoor Gardening | S.C.Day |
| 19. Gardening | ParimalMehra |

RAJARSHI SHAHU MAHAVIDYALAYA (AUTONOMOUS), LATUR
B. Sc. Second Year Semester – IV
BOTANY
CC -VIII Plant Breeding and Biotechnology

Lectures – 45 Maximum Marks – 50 Credits:02 Course code: U BOT-468

Objectives:

1. To understand different methods of plant breeding.
2. To acquire good knowledge about techniques in genetic engineering.
3. To acquire good knowledge about tissue culture in plants.
4. To understand methods of isolation of protoplasts and its fusion.

Course outcomes

1. To understand the importance of GMO. Able to explain different methods of plant breeding.
 2. Performs independently isolation of protoplasts and its fusion.
 3. Developed skill in genetic engineering.
-

Unit-I: PLANT BREEDING-I (10L)

1. Definition, Aims and Objectives

2. Centres of origin.
3. Methods of Plant Breeding:
 - i. Plant introduction and acclimatization.
 - ii. Mass Selection.
 - iii. Pure line selection.
 - iv. Clonal selection.
 - v. Pedigree selection.

Unit-II: PLANT BREEDING-II. (10L)

1. Hybridization.
2. Heterosis and hybrid vigour.
3. Mutation breeding.
4. Polyploidy.
5. Breeding in cotton

UNIT-III: BIOTECHNOLOGY – I (13)1.

Genetic Engineering:

- i. Definition, scope and importance
- ii. Tools: a) Restriction Endonucleases

b)Vectors: plasmids, cosmids. iii. Technique of r-DNA

iv. Genomic and cDNA libraries

2. Agrobacterium mediated gene transfer: (Biology of *Agrobacterium*, Ti - plasmid, and *Agrobacterium* mediated transfer technique),

5. Transgenic plants.

UNIT –IV: BIOTECHNOLOGY – II (12)

1. Tissue culture:

- i. Introduction, ii. Concept of Totipotency of cell, iii. Basic aspects of tissue culture laboratory, iv. Technique of tissue culture
- v. Callus culture, differentiation and morphogenesis.

2. Applications of Tissue culture:

- i. Micropropagation, ii. Production of secondary metabolites, iii. Somatic hybridization, iv. Anther culture and production of haploids.

SUGGESTED READINGS:

- | | |
|--------------------------------------------------------------------|----------------------------------------|
| 1. Plant Breeding: Principles and Methods. 7 th edition | Singh, B.D. (2005) |
| 2. Principles of plant breeding. | Allard, R.W. (1960). |
| 3. Plant Breeding: Theory and Practice 2 nd edition. | Chopra, V.L. (2000). New Delhi. |
| 4. Plant Breeding: Mendalian to Molecular Approaches. | Jain, H. K. and Kharwal, M.C. (2003) |
| 5. Advances in Plant Breeding. Vol 1 and 2, | Mandal, A.K., Ganguli, P.K., Banerjee, |
| 6. Principles and Practices of Plant Breeding | Sharma, J. R |
| 7. Plant Breeding | H.K. Chowdhari |
| 8. Biotechnology An Expanding Horizons | B.D.Singh |
| 9. Biotechnology | Verma S.K. |

SKILL ENHANCEMENT COURSE -II

PAPER II: NURSERY, GARDENING AND FLORICULTURE (SEC)

Periods – 45 Maximum Marks – 50 Credits:02 Course code: U ADC-434N

Objectives:

1. The courses aims at developing skills and making the students become self-reliable and employable besides giving them an edge when they seek employment in other Government and private sectors.
2. When students pass out of the college with their degrees, they also are equipped with additional skills to meet the challenges in future.

Course outcomes:

1. Ability to use a variety of garden tools and implements.
 2. Students are able to start commercial nurseries.
-

Unit-I:Nursery:

1. Definition, objectives, scope and building up of infrastructure for nursery.
2. Planning and seasonal activities - Planting - direct seeding and transplants.
3. Nursery Management and Routine Garden Operations.

Unit- II: Propagation methods:

- 1 Sowing/raising of seeds and seedlings, transplanting of seedlings.
2. Air-layering, cutting, selection of cutting, propagule collecting season, treatment of cutting rooting medium and planting of cuttings - Hardening of plants.
3. Propagation of ornamental plants by rhizomes, corms tubers, bulbs and bulbils.
4. Green house - mist chamber, shed root, shade house and glass house for propagation.

Unit- III: Floriculture:

1. Ornamental Plants: Flowering annuals; herbaceous, perennials; Divine vines; Shade and ornamental trees.
2. Ornamental bulbous and foliage plants; Cacti and succulents.
3. Ornamentals-palms.
4. Cultivation of plants in pots; Indoor gardening; Bonsai.

Unit IV: Commercial Floriculture:

1. Factors affecting flower production; Production and packaging of cut flowers; Flower arrangements; Methods to prolong vase life of flowers
2. Cultivation of Important cut flowers (Carnation, Aster, Dahlia, Gerbera, Anthuriums, Gladiolous, Marigold, Rose, Lilium)
3. Management of pests, diseases and harvesting.
4. Methods of harvesting.

Books for Reference:

1. Bose T.K. & Mukherjee, D., 1972, Gardening in India, Oxford & IBH Publishing Co., New Delhi.
2. Sandhu, M.K., 1989, Plant Propagation, Wile Eastern Ltd., Bangalore, Madras.
3. Kumar, N., 1997, Introduction to Horticulture, Rajalakshmi Publications, Nagercoil. institution)
4. Randhawa, G.S. and Mukhopadhyay, A. 1986. Floriculture in India. Allied Publishers.

Suggested Activities:

Raising a nursery, managing it, studying and drawing various land scaping designs, practicing layering methods, using shade nets to protect horticultural crops, practicing indoor gardening ,techniques, visiting florists and recording their methods of prolonging vase life of commercial cut flowers.

Practicals :

1. Tools, implements and containers used for propagation and nursery techniques.
2. Propagation by cutting, layering, budding and grafting
3. Seed propagation- preparation of portable trays, seed treatments, sowing and seedling production.
4. Identification and description of annuals, herbaceous perennials, climbers, creepers, foliage and flowering shrubs, trees, palms, ferns, ornamental grasses; cacti and succulents.
5. Planning and designing of gardens, functional uses of plants in the landscape
6. Preparation of land for lawn and planting.
7. Identification of commercially important flower crops and their varieties.
8. Propagation practices in flower crops, sowing of seeds and raising of seedlings of annuals.
9. Use of chemicals and other compounds for prolonging the vase life of cut flowers.
10. Grading, packing and marketing of cut flowers.

11. Visit to commercial nurseries and commercial tissue culture laboratory
12. Study project under supervision of lecturer – nursery/ornamental flowers/ plants/lawn designing/landscape designing

RAJARSHI SHAHU MAHAVIDYALAYA (AUTONOMOUS), LATUR

B. Sc. Second Year Semester – IV

BOTANY

Lab. Course-V

(Based on CC -VII)

Periods – 45 Maximum Marks – 50 Credits:02 Course outcomes: U BOT-469

Course outcomes

- 1) Students identify morphology characters of plant.
 - 2) Students able to manage the crops in different soil by identify the soil pH, water holding capacity of soil etc.
 - 3) Students identify the different species of plant in some proper area i.e. diversity of plant.
 - 4) Students able to improve the gardens by different method.
-

Practical 1: Study of morphological and anatomical adaptations in hydrophytes – *Lotus petiole*

Practical 2: Study of morphological and anatomical adaptations in xerophytes – *Nerium*.

Practical 3: Determination of water holding capacity of different soils.

Practical 4: Estimation of salinity of different water samples.

Practical 5-6: Study of vegetation by quadrat method.

Practical 7: Determination of pH of different soils by pH paper/ pH meter.

Practical 8: Garden tools and implements.

Practical 9: Different types of pots.

Practical 10: Procedure of potting.

Practical 11: Preparation of Bonsai.

Practical 12-13: Visits to Gardens, Nurseries, Agriculture Colleges/Universities, Exhibitions, Polyhouses, Flower shows etc.

N.B: 1) Any ten Practicals

2) Several Short Excursions and At least one Long Excursion

RAJARSHI SHAHU MAHAVIDYALAYA (AUTONOMOUS), LATUR

B. Sc. Second Year Semester – IV

BOTANY

Lab. Course-VI

(Based on CC-VIII)

Periods – 45

Maximum Marks – 50 Cridits:02 Course outcomes: U BOT-470

Course outcomes

- 1) Students identify easily ploidy level of different plants.
 - 2) Students able to do different techniques of hybridization.
 - 3) Students easily prepare different medium.
-

Practical 1-3: Colchicine treatment to induce tetra ploidy in onion root cells.

Practical 4-5: Demonstration of techniques of hybridization (emasculation, pollination, tagging and bagging)

Practical 6-7: Effect of physical or chemical mutagens on crop plants (photographs) of M_1 and M_2 population.

Practical 8-9: Preparation and sterilization of the MS medium, slant preparation and inoculation.

Practical 10-11: Demonstration of techniques in callus culture and somatic hybridization

Practical 12-13: Visit to Plant breeding station, tissue culture laboratory/ Biotechnology institute is compulsory.

N.B: 1) Any Ten practicals

2) Several short Excursion and at least one Long Excursion.

SKELETON OF QUESTION PAPER B. Sc. Second Year

Semester – III & IV

Theory Paper-V, VI, VII and VIII

Time: 1.30 hours

Maximum Marks: 30

Note: (i) Attempt all questions.

(ii) Draw neat and well labeled diagrams wherever necessary.

Q1. Attempt any four of the following (Each 3 marks)

12

- a)
- b)
- c)
- d)
- e)

Q2. Attempt any two of the following

08

- a)
- b)
- c)

Q3. Attempt any ONE of the following

10

- a)
- b)

RAJARSHI SHAHU MAHA VIDYALAYA, LATUR

(Autonomous)



B.Sc. II PRACTICAL EXAMINATION IN BOTANY

SEE WINTER/SUMMER

Time: Three Hours

Maximum Marks: 30

Note: - (i) Attempt all questions.

(ii) Draw neat and well labeled diagrams wherever necessary.

Q. 1. Long answer type question.	10
Q. 2. Long answer type question.	10
Q. 3. Spotting: (02 spots)	05
Q. 4. Viva- Voce.	05

S.N.Shinde
Chairman
Board of Studies in Botany
Rajarshi Shahu Mahavidyalaya (Autonomous),
Latur