

CSSR & SRRM DEGREE & PG COLLEGE
(Autonomous)

Kamalapuram - 516289, Kadapa, A.P.



Board of Studies
II-Minutes of the Meeting
Department of Botany

Dated: 11/09/2025

**CSSR & SRRM DEGREE & PG COLLEGE
(Autonomous)**

Kamalapuram - 516289, Kadapa, A.P.



**Board of Studies
II-Minutes of the Meeting
Department of Botany**

Dated: 11/09/2025

AGENDA

1. To approve the syllabus for I B.Sc. Honours (Botany) syllabus for I and II semesters.
2. To approve the course structure, Continuous Internal Assessment (CIA), Semester End Examination (SEE) Patterns (Theory & Practical's).
3. To approve course outcomes, Model Question Paper, (Theory & Practical's) for I Semester
 - (i) **Diversity of Microbes** (Major Paper-I) for I Year, Semester -I, B.Sc. Honours (Botany) in the academic year 2025-26
 - (ii) **Diversity of Thallophytes** (Major Paper-II) for I Year, Semester -I BSc. Honours (Botany) for the academic year 2025-2026.
4. To approve course outcomes, revised syllabus, Blue Print, Model Question Paper, (Theory & Practical's) for II Semester
 - (i) **Diversity of Archegonitales** (Major Paper-III) for I Year, Semester -II BSc. Honours (Botany) for the academic year 2025-2026
 - (ii) **Anatomy and Embryology of Angiosperms** (Major Paper-IV) for I Year, Semester -I BSc. Honours (Botany) for the academic year 2025-2026
5. To approve other academic activities of the department.
6. Any discussions with approval of the chair.

Course Structure – for academic year-2025-2026 on words

| Year | Semester | Course | Title of the Course | Hours for week | No. of credits | IA | EA | Total |
|------|----------|--------|--|----------------|----------------|----|----|-------|
| I | I | 1 | Diversity of Microbes | 3 | 3 | 30 | 70 | 100 |
| | | | Diversity of Microbes - Practical | 2 | 1 | - | 50 | 50 |
| | | 2 | Diversity of Thallophytes | 3 | 3 | 30 | 70 | 100 |
| | | | Diversity of Thallophytes- Practicals | 2 | 1 | - | 50 | 50 |
| | II | 3 | Diversity of Archegoniate | 3 | 3 | 30 | 70 | 100 |
| | | | Diversity of Archegoniate-Practicals | 2 | 1 | - | 50 | 50 |
| | | 4 | Anatomy and Embryology of Angiosperms | 3 | 3 | 30 | 70 | 100 |
| | | | Anatomy and Embryology of Angiosperms-Practicals | 2 | 1 | - | 50 | 50 |

Continuous Internal Assessment

In each semester, for every subject there are two Internal Examination with 30 marks each and time duration of 1 Hour. The Thirty marks are divided as:

| Sl. No | Name of the Activity | Marks Allotted |
|--------|--|----------------|
| 1 | Internal Examination | 20 |
| 2 | Co Circular Activities: Seminar/Assignment | 5 |
| 3 | Extra Circular Activities: NSS/NCC/Sports/Clean & Green Activities/Community Services | 5 |

Theory - Semester End Examinations:

The semester end theory examination is for 70 marks with the time duration of 3 Hours.

Practical -Semester End Examinations:

The semester end Practical examination is for 50 marks with the time duration of 3 Hours

| Sl. No. | Name of the Activity | Marks Allotted |
|---------|----------------------|----------------|
| 1 | Record | 7 |
| 2 | Viva voice | 3 |
| 3 | Practical | 40 |

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SEMESTER-I

COURSE 1: DIVERSITY OF MICROBES

Theory

Credits: 3

3 hrs/week

I. Learning Objectives: By the end of this course the learner has to:

1. Gain awareness on hypotheses about the origin of life on Earth, and structure and multiplication of viruses.
2. Identify and describe the unique characteristics and significance of special types of bacteria.
3. Describe the structure, classification, and reproductive methods of eubacteria.
4. Tell the types of soil microorganisms and explain their interactions with each other, plants, and soil components.
5. Identify and differentiate between beneficial and harmful activities microbes in different fields.

II. Course Outcomes: On completion of this course students will be able to:

1. Illustrate the origin of life on Earth and diversity, multiplication and economic value of viruses.
2. Deliberate the general characteristics, and economic importance of special groups of bacteria.
3. Explain the structure, nutrition, reproduction and significance of eubacteria.
4. Evaluate the interactions of soil microbes among themselves and with plants.
5. Compile the value and applications of microbes in various fields.

III. Syllabus of Theory:

10 Hrs.

Unit-1: Origin of life and Viruses

1. Origin of life, concept of primary Abiogenesis; Miller and Urey experiment.; discovery of microorganisms, Pasteur experiments, germ theory of diseases; three domain – six kingdom classification of Carl Woese.
2. Shape and symmetry of viruses; structure of TMV and Gemini virus.
3. Lytic and lysogenic cycles of T-even phages; a brief account of prions, viroids and virusoids.
4. Transmission of plant viruses and their control; significance of viruses in production of vaccines and bio-pesticides.

Unit-2: Special groups of Bacteria

7 Hrs.

1. General characteristics, and economic importance of following special groups of bacteria:
a) Archaeobacteria b) Actinomycetes c) Phytoplasma d) Cyanobacteria
2. Culture and cultivation of Spirulina

Unit-3: Eubacteria

8 Hrs.

1. Occurrence, distribution and cell structure of eubacteria; classification of Eubacteria based on nutrition
2. Reproduction- asexual (binary fission and endospores) and bacterial recombination (conjugation, transformation, and transduction).
3. Economic importance of Eu-bacteria with reference to their role in Agriculture and industry (fermentation and medicine).

Unit-4: Soil microbes – interactions

10Hrs.

1. Distribution of microorganisms in soil; factors influencing the soil microflora; role of microorganisms in soil fertility.
2. Microbial interactions: symbiosis, neutralism, commensalism, competition, antagonism, synergism, parasitism and predation.
3. Microorganisms of rhizosphere, phyllosphere and spermosphere; microbial interactions and their effect on plant growth.

Unit-5: Beneficial and harmful microbes.

10 Hrs.

1. A brief account of symptoms of viral diseases in plants; Tungro disease in paddy.
2. A summary of symptoms of bacterial diseases in plants; Citrus canker.

3. Microorganisms as food; probiotics and prebiotics; products from microorganisms, Metabolites, enzymes, and antibiotics.
4. Bacterial and Cyanobacterial biofertilizers – their applications; Bacterial biopesticides and their applications.

IV. Text Books:

1. Bhattacharjee, R.N., (2017) Introduction to Microbiology and Microbial Diversity, Kalyani Publishers, New Delhi.
2. Dubey, R.C. & D. K. Maheswari (2013) A Text Book of Microbiology, S.Chand & Company Ltd., New Delhi
3. Toshniwal, R.L. (2007) Agricultural Microbiology, Agrobios (India), Jodhpur

V. Reference Books:

1. Pelczar Jr., M.J., E.C.N. Chan & N. R. Krieg (2001) Microbiology, Tata McGraw- Hill Co, New Delhi
2. Prescott, L. Harley, J. and Klein, D. (2005) Microbiology, Tata McGraw –Hill Co. New Delhi.
3. Gyaneshwar, A.D., G.J. Parekh, and V.S. Reddy (2004) Agricultural Microbiology: Plant-Soil Interactions, Research Signpost, Kerala, India

VI. Suggested activities and evaluation methods:

Unit-1: Activity: Collecting scientific literature on historical developments in microbiology.

Evaluation method: Evaluating the report based on a rubric.

Unit-2: Activity: Group discussion on various groups of special bacteria.

Evaluation method: Assessment of active participation, soft skills, communication skills, collaborative skills, time management etc., of a group or a student based on a rubric.

Unit-3: Activity: Presentation or poster summarizing the classification of Eu-bacteria based on nutrition.

Evaluation method: Assessment based on accuracy and understanding.

Unit-4: Activity: Microscopic observation of bacterial samples from soil/ phylloplane in their native place/ college campus.

Evaluation method: Evaluating the report on characteristics and classification of eubacteria.

Unit-5: Activity: Visit to Agriculture/Horticulture universities to learn about biofertilizers and biopesticides.

Evaluation method: Evaluating the report submitted by the student based a rubric.

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SEMESTER-I
COURSE 1: DIVERSITY OF MICROBES
Credits: 1

Practical

2 hrs/week

I. Course Outcomes: On successful completion of this practical course, student shall be able to:

1. Take all necessary precautions in the microbiology laboratory.
2. Handle the instruments and prepare media for laboratory work.
3. Identify various microbes through microscopic observations.

II. Laboratory/Field exercises:

1. Study the principle and applications of important instruments (autoclave, hot air oven, incubator, Inoculation loop, Inoculation needle, membrane filter, laminar air flow system, colony counter, biological safety cabinets, BOD incubator, pH meter) used in the microbiology laboratory.
2. Study of Viruses (TMV and Gemini) using electron micrographs/ models.
3. Microscopic study of Cyanobacteria using temporary/permanent slides.
4. Study of Archaeobacteria, Actinomycetes and Phytoplasma using permanent slides/ electron micrographs/diagrams.
5. Microscopic study of Eubacteria using temporary/permanent slides.
6. Gram staining technique of Bacteria.
7. Demonstration of culture and cultivation of *Spirulina*
8. Tungro in Paddy and Citrus canker

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COURSE 2:**SEMESTER-I
DIVERSITY OF THALLOPHYTES****Theory****Credits: 3****3 hrs/week****I. Learning Objectives:** By the end of this course the learner has to:

1. Brief the general characters, classification and value of algae.
2. Discuss the morphology, reproduction and life cycles of some algae.
3. Tell the general characters, classification and value of fungi.
4. Discuss the morphology, reproduction and life cycles of some fungi.
5. Summarize the morphology, anatomy, reproduction and economic value of lichens.

II. Course Outcomes: On completion of this course students will be able to:

1. Compile the general characteristics of algae and their significance in nature.
2. Compare and contrast the characteristics of different groups of algae.
3. Summarize the important features of fungi and their economic value.
4. Distinguish different groups of fungi based on their characteristics.
5. Elaborate the features and significance of lichens.

III. Syllabus of Theory:**Unit-1: Introduction to Algae 8Hrs.**

1. General characteristics of algae: occurrence and distribution, cell structure, pigments, flagella and reserve food material.
2. F.E.Fritsch (1935) classification of algae; thallus organization in algae.
3. Life cycles in algae; ecological and economic importance of algae.

Unit-2: Biology of selected Algae 10Hrs.

1. Occurrence, structure, reproduction and life cycle of:
(a) Chlorophyceae: Spirogyra (b) Phaeophyceae: Ectocarpus and (c) Rhodophyceae: Polysiphonia
2. Culture and cultivation of Chlorella

Unit-3: Introduction to Fungi 8Hrs.

1. General characteristics of fungi; Ainsworth (1973) classification.
2. Thallus organization and nutrition in fungi.
3. Reproduction in fungi (asexual and sexual); heterothallism and para-sexuality.
4. Ecological and economic importance of fungi.

Unit-4: Biology of selected Fungi 10Hrs.

1. Occurrence, structure, reproduction and life cycle of:
(a) Zygomycotina: Rhizopus (b) Ascomycotina: Penicillium (c) Basidiomycotina: Puccinia

Unit-5: Lichens 7 Hrs.

1. Lichens: definition, phycobionts and mycobionts in lichens; morphology and internal structure of lichens; classification based on growth form, habitat and fungal partner.
2. Reproduction – vegetative, asexual and sexual methods.
3. Ecological and economic importance of lichens.

IV. Text Books:

1. Pandey, B.P. (2013) College Botany, Volume-I, S. Chand Publishing, New Delhi
2. Hait, G., K. Bhattacharya & A.K. Ghosh (2011) A Text Book of Botany, Volume-I, New Central Book Agency Pvt. Ltd., Kolkata

V. Reference Books:

1. Fritsch, F.E. (1945) The Structure & Reproduction of Algae (Vol. I & Vol. II) Cambridge University Press Cambridge, U.K.
2. Bold, H.C. & M. J. Wynne (1984) Introduction to the Algae, Prentice-Hall Inc., New Jersey
3. Robert Edward Lee (2008) Phycology. Cambridge University Press, New York

VI. Suggested activities and evaluation methods:

Unit-1: Activity: Algae specimen collection from any water bodies in their locality, recording the characteristics, identification and classifying them according to Fritsch system.

Evaluation method: Evaluating the presentation or report summarizing findings.

Unit-2: Activity: Microscopic observations and recording distinguishing characters of any six algal forms excluding the genera in the syllabus.

Evaluation method: Conducting a Quiz or an exam/ evaluating the chart or drawings or summarized data on similarities and differences.

Unit-3: Activity: Collection of economically valuable fungal products.

Evaluation method: Evaluating the collections made and awarding grade.

Unit-4: Activity: Group discussion/quiz/JAM on characteristics of various groups of algae. **Evaluation method:** Assessment of the performance of individual/group of students based on a rubric.

Unit-5: Activity: Microscopic observations and summarizing the salient features of the fungal genera and lichen forms in the syllabus.

Evaluation method: Conducting a Quiz or an exam/ evaluating the chart or drawings or concise data on similarities and differences.

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COURSE 2:

**SEMESTER-I
DIVERSITY OF THALLOPHYTES**

Practical

Credits: 1

2 hrs/week

I. Course Outcomes: On successful completion of this practical course, student shall be able to:

1. Identify some algal and fungal species based on the structure of thalli and reproductive organs.
2. Decipher the lichens based on morphological, anatomical and reproductive features.
3. Realize the value of algal, fungal and lichen products available in markets.

II. Laboratory/field exercises:

Study/ microscopic observation of vegetative, sectional/anatomical and reproductive structures of the following using temporary or permanent slides/ specimens/ mounts:

1. **Algae:** Spirogyra, Ectocarpus, Vaucheria and Polysiphonia; a centric and a pennate diatom.
2. Demonstration of culture and cultivation of Chlorella
3. Identification of some algal products available in local market.
4. **Fungi:** Rhizopus, Penicillium and Puccinia
5. Identification of some fungal products available in the local market.
6. **Lichens:** Crustose, foliose and fruiticose
7. Identification of some lichen products available in the local market

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SEMESTER-II

COURSE 3:

DIVERSITY OF ARCHEGONIATES

Theory

Credits: 3

3 hrs/week

I. Learning Objectives: By the end of this course the learner has to:

1. Explain the general characters, classification and significance of Bryophytes.
2. Discuss the morphological, anatomical and reproductive characters of Pteridophytes.
3. Acquire knowledge of evolutionary trends in Pteridophytes and their value.
4. Brief the morphological, anatomical and reproductive characters of Gymnosperms.
5. Summarize the evolutionary trends in Gymnosperms.

II. Course Outcomes: On completion of this course students will be able to:

1. Compare and contrast the morphological, anatomical and reproductive features of some Bryophytes.
2. Illustrate the morphological, anatomical and reproductive characteristics of some Pteridophytes.
3. Infer the evolution of vasculature, heterospory, and seed habit in Pteridophytes.
4. Compare and contrast the morphological, anatomical and reproductive features of some Gymnosperms.
5. Evaluate the evolutionary trends in Gymnosperms.

III. Syllabus of Theory:

Unit-1: Biology of Bryophytes 9 Hrs.

1. General characteristics of Bryophytes; Rothmaler (1951) classification.
2. Occurrence, morphology, anatomy, reproduction (developmental details are not needed) and life cycle of (a) Hepaticopsida: *Marchantia* (b) Anthocerotopsida: *Anthoceros* (c) Bryopsida: *Funaria*
3. General account on the evolution of sporophytes in Bryophyta.

Unit-2: Biology of Pteridophytes 10 Hrs.

1. General characteristics of Pteridophyta; Smith (1955) classification.
2. Occurrence, morphology, anatomy, reproduction (developmental details are not needed) and life history of: (a) Lycopsida: *Lycopodium* (b) Sphenopsida: *Equisetum* and (c) Filicopsida: *Marsilea*

Unit-3: Evolutionary trends in Pteridophytes 8 Hrs.

1. Geological time scale; a brief account of Rhynia
2. Stellar evolution in Pteridophytes; heterospory and seed habit.
3. Ecological and economic importance of Pteridophytes.

Unit-4: Biology of Gymnosperms 10 Hrs.

1. General characteristics of Gymnosperms; Sporne (1965) classification.
2. Occurrence, morphology, anatomy, reproduction (developmental details are not needed) and life history of: (a) Cycadopsida: *Cycas* (b) Ginkgoopsida: *Ginkgo* and (b) Gnetopsida: *Gnetum*

Unit-5: Evolutionary trends in Gymnosperms 8 Hrs.

1. A brief account on fossilization processes and types of fossils.
2. A over view of Cycadeoidea and Pentoxylon
3. A summary of evolutionary trends in Gymnosperms.
4. Ecological and economic importance of Gymnosperms.

IV. Text Books:

1. Acharya, B.C., (2019) Archchegoniates, Kalyani Publishers, New Delhi

2. Bhattacharya, K., G. Hait & Ghosh, A. K., (2011) A Text Book of Botany, Volumell, New Central Book Agency Pvt. Ltd., Kolkata
3. Hait, G., K. Bhattacharya & A.K. Ghosh (2011) A Text Book of Botany, Volume-I, New Central Book Agency Pvt. Ltd., Kolkata

V. Reference Books:

1. Shaw, A.J. & B. Goffinet (2000) Bryophyte Biology. Cambridge University Press, New York.
2. Smith, G.M. (1971) Cryptogamic Botany Vol. II., Tata McGraw Hill, New Delhi
3. Sharma, O.P. (2012) Pteridophyta. Tata McGraw-Hill, New Delhi

VI. Suggested activities and evaluation methods:

Unit-1: Activity: Collection and identification of Bryophytes from their locality.

Evaluation method: Assessing the collections made by the student and assigning a grade.

Unit-2: Activity: Making temporary slides/models/drawings of Pteridophytes in the syllabus. **Evaluation method:** Assessment of the temporary slides/model/drawing.

Unit-3: Activity: Group discussion/Quiz/JAM on evolutionary trends in Pteridophytes. **Evaluation method:** Assessing the abilities of a group/ an individual based on the performance.

Unit-4: Activity: Study of wood elements in locally available Gymnosperms and making temporary slides. **Evaluation method;** Validation of prepared slides submitted by the learner.

Unit-5: Activity: Assignment/seminar on evolutionary trends in Gymnosperms-making comparative account. **Evaluation method:** Evaluating the quality of assignment written with apt examples/quality of presentation using a rubric.

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COURSE 3:

**SEMESTER-II
DIVERSITY OF ARCHEGONIATES**

Practical Credits: 1 2 hrs/week

I. Course Outcomes: On successful completion of this practical course, the student shall be able to:

1. distinguish the Pteridophytes and Gymnosperms based on their morphological, anatomical and reproductive structures.
2. Make systematic classification of plant species using vegetative and floral characters.
3. Identify angiosperm plant species and make herbarium specimens.

II Laboratory/field exercises:

1. Study/ microscopic observation of vegetative, sectional/anatomical, and reproductive structures of the following using temporary or permanent slides/specimen/ mounts:
 - A. Bryophyta: Marchantia, Anthoceros and Funaria
 - B. Pteridophyta: Rhynia, Lycopodium, Equisetum, and Marselia
 - C. Gymnosperms: Cycadeoidea, Pentoxylon, Cycas, Ginkgo and Gnetum
2. Field trip to a Botanic garden or local floristic area/forest.

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SEMESTER-II
COURSE 4: ANATOMY AND EMBRYOLOGY OF ANGIOSPERMS

Theory

Credits: 3

3 hrs/week

I. Learning Objectives: By the end of this course the learner has to:

1. Deliberate about various types of tissues in plants and their organization.
2. Explain anomalous secondary growth in plants and economic value of woods.
3. Debate on structure of anther and development of male gametophyte in plants.
4. Discuss the structure of ovules and process of fertilization.
5. Explain the embryo development and seed structure in monocots and dicots.

II. Course Outcomes: On completion of this course students will be able to:

1. Categorize various tissues and evaluate their role in plants.
2. Explain anomalous secondary growth in some plants and justify the value of timber plants.
3. Summarize the events in micro-sporogenesis and development of male gametophyte.
4. Illustrate the events in mega-sporogenesis and development of female gametophyte.
5. Propose the incidents in embryogenesis and structure of seeds in angiosperms.

III. Syllabus of Theory:

Unit – 1: Tissues in plants 8 Hrs.

1. Meristematic tissues: Definition, classification, structure and functions.
2. Apical meristems: Generalized structure of shoot apex, theories on organization of Shoot Apical Meristem (SAM) - Apical cell theory, Tunica-Corpus theory and Histogen theory.
3. Permanent tissues (simple and complex); a brief account of plant secretory tissues/cells.

Unit-2: Anomalous growth in plants 10Hrs.

1. Tissue systems—Epidermal, ground and vascular.
2. Anomalous secondary growth in root of *Beta vulgaris*; anomalous secondary growth in stems of *Boerhaavia* and *Dracaena*
3. Study of timbers of economic importance - Teak, Red-sanders and Rosewood; applications of anatomy forensics and pharmacognosy.

Unit-3: Anther and pollen 10Hrs.

1. Anther: Structure and functions of anther wall, micro-sporogenesis.
2. Pollen wall structure, NPC system; development of male gametophyte, MGU (male germ unit).
3. Pollen wall proteins; pollen viability, storage and germination; abnormal features: Pseudomonads and polyads; Nemec phenomenon.
4. A brief account of palynology and its scope.

Unit-4: Ovules, fertilization and endosperm 10Hrs.

1. Structure and types of ovules, megasporogenesis; monosporic (*Polygonum*), bisporic (*Allium*) and tetrasporic (*Peperomia*) types of embryo sacs.
2. Pollination: types of self and cross pollination – contrivances; agents of pollination.
3. Double fertilization in angiosperms – process and consequences.
4. Perisperm; endosperm— types (free nuclear, cellular, helobial and ruminant) and biological importance.

Unit-5: Embryogeny and seeds 7Hrs.

1. Embryo development in dicot (*Capsella bursa-pastoris*) and monocot (*Sagittaria sagittifolia*) plants.
2. Seed structure in monocot and dicot; importance of seed and seed dispersal mechanisms.

3. Polyembryony and apomixes: Introduction, classification, causes and applications.

IV. Text Books:

1. Pandey, B.P. (2013) College Botany, Volumes-II& III, S. Chand Publishing, New Delhi
2. Bhattacharya, K., G. Hait & Ghosh, A. K., (2011) A Text Book of Botany, Volume-II, New Central Book Agency Pvt. Ltd., Kolkata

V. Reference Books:

1. Esau, K. (1971) Anatomy of Seed Plants. John Wiley and Son, USA.
2. Fahh, A. (1990) Plant Anatomy, Pergamon Press, Oxford.
3. Paula Rudall (1987) Anatomy of Flowering Plants: An Introduction to Structure and Development. Cambridge University Press, London
4. Bhojwani, S. S. and S. P. Bhatnagar (2000) The Embryology of Angiosperms (4th Ed.), Vikas Publishing House, Delhi.

VI. Suggested activities and evaluation methods:

Unit-1: Activity: Microscopic observations on different tissues in plants and recording characteristics.

Evaluation method: Judgement of the report/seminar on comparative and contrasting features of various tissues in plants.

Unit-2: Activity: Visits to timber depots and furniture shops and making a report on various woods.

Evaluation method: Assessment of report submitted with data, photographs and summary. **Unit-3: Activity:** Study of pollen structure, germination and viability in some local plant species.

Evaluation method: Evaluating the report/seminar presentation with collected data.

Unit-4: Activity: Group discussion/quiz on endosperm types and functions. Evaluation method: Assessment of the best performing group.

Unit-5: Activity: Drawings of embryogeny in some angiosperms and making comparative report.

Evaluation method: Evaluating the best drawings and comparative report.

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SEMESTER-II

COURSE 4: ANATOMY AND EMBRYOLOGY OF ANGIOSPERMS

Practical

Credits: 1

2 hrs/week

I. Course Outcomes: On successful completion of this practical course, student shall be able to:

1. Conduct dissections of various plant organs and study the internal structures by staining.
2. Explain the embryological characteristics from sex organs to seeds in angiosperms.
3. Demonstrate skills in studying anatomical and embryological features of angiosperms.

II. Laboratory/field exercises:

1. Observation of meristems in dicot and monocot plants.
2. Tissue organization in shoot apices using permanent slides.
3. Anomalous secondary growth in root of *Beta vulgaris*
4. Anomalous secondary growth in stems of *Boerhaavia* and *Dracaena*.
5. Study of anther and ovules using permanent slides/photographs.
6. Study of pollen germination and pollen viability.
7. Dissection and observation of embryo sac haustoria in *Santalum* or *Argemone*.
8. Structure of endosperm (nuclear and cellular) using permanent slides/photographs.
9. Dissection and observation of endosperm haustoria in *Crotalaria* or *Coccinia*.
10. Developmental stages of dicot and monocot embryos using permanent slides/photographs

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Practical -Semester End Examinations:

The semester end Practical examination is for 50 marks with the time duration of 3 Hours

| Sl. No | Name of the Activity | Marks Allotted |
|--------|----------------------|----------------|
| 1 | Record | 7 |
| 2 | Viva voice | 3 |
| 3 | Practical | 40 |

Practical model Question paper

II B.Sc. Semester-III

Botany Practical Examination (2025-2026)

Subject: Botany (Honours) Max.Marks: 50

Time: 3hour

Paper-Date:

Session:

| | |
|---|-----------------------|
| 1. Experiment-1 (Major Experiment) | 15M |
| 2. Experiment-2 (Minor Experiment) | 10M |
| 3. Identify C,D,E,&F with specific reasons. (Spotters & slides) | 3X5=15 M |
| 4. Record + Viva-voce | 7+3 = 10M |
| | Total 50 Marks |

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CSSR & SRRM DEGREE & PG COLLEGE

Autonomous

Re- accredited with NAAC 'A' Grade (Cycle-II)
(Permanently Affiliated to Yogi Vemana University, Kadapa)

II B.Sc. Honours (Botany)

Semester-I &II

BLUE PRINT

Duration: 3 Hrs

Total Marks: 70M

SECTION-A

Answer any Five questions. Each question carries 4 Marks.

5×4 = 20 M

| Topics | Questions Given | Allotted Marks |
|--------|-----------------|----------------|
| UNIT-1 | 1 | 4 |
| | 2 | |
| UNIT-2 | 3 | 4 |
| | 4 | |
| UNIT-3 | 5 | 4 |
| | 6 | |
| UNIT-4 | 7 | 4 |
| | 8 | |
| UNIT-5 | 9 | 4 |
| | 10 | |

SECTION-B

Answer ALL the Questions. Each question carries 10 MARKS.

5×10 = 50 M

| Topics | Questions Given | No. of Questions to be Answered | Allotted Marks |
|--------|-----------------|---------------------------------|----------------|
| UNIT-1 | 11 | 1 | 10 |
| | 12 | | |
| UNIT-2 | 13 | 1 | 10 |
| | 14 | | |
| UNIT-3 | 15 | 1 | 10 |
| | 16 | | |
| UNIT-4 | 17 | 1 | 10 |
| | 18 | | |
| UNIT-5 | 19 | 1 | 10 |
| | 20 | | |

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CSSR & SRRM DEGREE & PG COLLEGE
Autonomous
Re- accredited with NAAC 'A' Grade (Cycle-II)
(Permanently Affiliated to Yogi Vemana University, Kadapa)

II B.Sc. Honours (Botany)

Semester-I &II

BLUE PRINT

Duration: 3 Hrs

Total Marks: 70M

SECTION-A

Answer any **Five** questions. Each question carries **4** Marks.

5×4 = 20 M

| Topics | Questions Given | Allotted Marks |
|--------|-----------------|----------------|
| UNIT-1 | 1 | 4 |
| | 2 | |
| UNIT-2 | 3 | 4 |
| | 4 | |
| UNIT-3 | 5 | 4 |
| | 6 | |
| UNIT-4 | 7 | 4 |
| | 8 | |
| UNIT-5 | 9 | 4 |
| | 10 | |

SECTION-B

Answer **ALL** the Questions. Each question carries **10** MARKS.

5×10 = 50 M

| Topics | Questions Given | No. of Questions to be Answered | Allotted Marks |
|--------|-----------------|---------------------------------|----------------|
| UNIT-1 | 11 | 1 | 10 |
| | 12 | | |
| UNIT-2 | 13 | 1 | 10 |
| | 14 | | |
| UNIT-3 | 15 | 1 | 10 |
| | 16 | | |
| UNIT-4 | 17 | 1 | 10 |
| | 18 | | |
| UNIT-5 | 19 | 1 | 10 |
| | 20 | | |

S. Reddy
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I B.Sc. Botany Honours
Semester-I

MODEL QUESTION PAPER
Paper: I Diversity of Microbes

Time: 3 Hours

Max Marks: 70

PART - A

Answer ANY FIVE of the following.

(5 x 4 = 20 marks)

1. Germ theory of disease
2. Shape and symmetry of viruses
3. Archaeobacteria economic importance
4. Hormogonia
5. Conjugation
6. General account of Bacteria
7. Competition
8. Antagonism
9. Metabolites
10. Antibiotics

PART - B

Answer ALL of the following questions

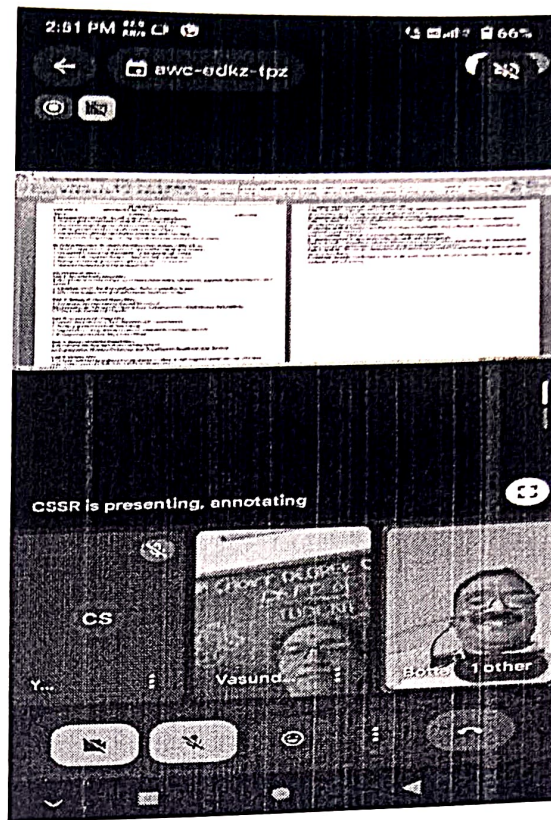
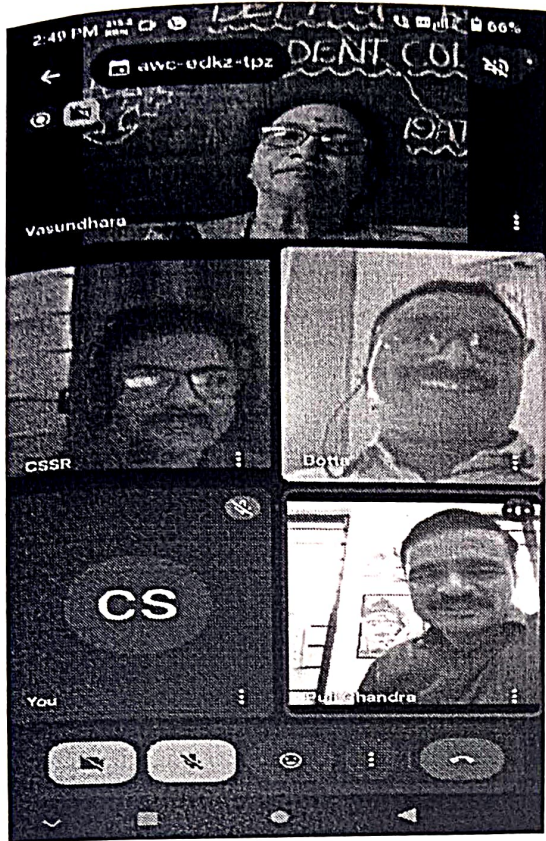
(5 x 10 = 50 marks)

11. Give an account of origin of life
- Or
12. Lytic and lysogenic cycle of T-even phages
13. Give an account of Archaeobacteria
- Or
14. Give an account of Phytoplasma
15. Classification of Eubacteria
- Or
16. Reproduction of bacteria
17. Give an account on the distribution of soil micro-organisms
- Or
18. Give an account on microbial interaction and their effect on plant growth
19. Write about the Tungro disease in plant body
- Or
20. Give an account on Cyanobacterial biofertilizers

S. K. H
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List of BoS Members

| Sl. No. | Category | Name of the Faculty | Designation | Position | Signature |
|---------|---|--|------------------------|----------------|-------------------------------|
| 1 | In charge of the Department | S.Md Haneef | Head of the Department | Chairperson | <i>S.Md Haneef</i> |
| 2 | Two experts from outside the Parent University nominated by Academic Council | Dr.BV. Ramana Naidu KSN Government Degree College, Ananthapuram Ph: 9347573296 Email id: venkataramananaidubotta@gmail.com | Lecturer | Subject Expert | <i>Vasundhara</i> (online) |
| | | Dr. J. Vasundhara Department of Botany Government Degree College Banaganpalle Ph: 9293196382 Email id: vasu3k@gmail.com | Lecturer | Subject Expert | <i>Vasundhara</i> (online) |
| 3 | One Expert Nominated by Vice Chancellor | Dr.P. Chandra Obul Reddy Department of Botany Yogi Vemana University Kadapa Ph: 9908592005 Email id: pcoreddy@gmail.com | Professor | Subject Expert | <i>P. Chandra Obul Reddy</i> |
| 4 | One representative from Industry/ Corporate allied areas nominated by the Principal | Rama Subba Reddy.C Shakthi Engineering Equipment Hyderabad Ph: 07947105250 | Industrialist | Member | <i>Absent</i> |
| 5 | Alumni nominated by the Principal | G. Sonallika | Alumni | Member | <i>Absent</i> |



x.
S. Mendir
P. w. m. g.