ADUSUMILLI GOPALAKRISHNAIAH & SUGAR CANE GROWERS SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE, VUYYURU-521165, KRISHNA Dt., A.P. (AUTONOMOUS)

DEPARTMENT OF BOTANY

2018-2019

BOARD OF STUDIES

Minutes of Meeting

24-04-2018

Minutes of the meeting of Board of studies in Botany for the Autonomous courses of AG & SG Siddhartha Degree College of Arts & Science, Vuyyuru, held at 10:30 A.M on 24-04-2018 in the Department of Botany.

Members Present:

1)..CH. Beulah Ranjani.....Chairman **(Smt. CH. Beulah Ranjani)**	Head, Department of Botany AG & SG S Degree College of Arts & Science Vuyyuru-521165
2)..L. Suseela 24/4/18..University **(Smt. Dr.L.Suseela)** Nominee	Department of Biotechnology & Head (I/c) Botany, Krishna University, Machilipatnam.
3)..T. Rose mary.....Academic **(Dr. Mrs. Rose Mary)** Council Nominee	Head, Department of Botany Andhra Loyola College Vijayawada
4)..Ch. Srinivasa Reddy..... Academic **(Sri.Dr.CH.Srinivasa Reddy)** Council Nominee	Head, Department of Botany P.B. Siddhartha Degree College Vijayawada
5)..N. Ramana Rao.....Member **(Sri. N. Ramana Rao)**	Ad hoc Lecturer in Botany AG & SGS Degree College of Arts & Science (Autonomous), Vuyyuru-521165.
6)..G. Ganesh.....Member **(Sri. E. Ganesh)**	Ad hoc Lecturer in Botany AG & SGS Degree College of Arts & Science (Autonomous), Vuyyuru-521165.

Agenda for B.O.S Meeting:

1. To recommend the syllabi (Theory & Practical), Model question paper & Guide lines for Semesters I & II of I B.Sc (BZC) in the academic year 2018-19.

2. To recommend the syllabi (Theory & Practical), Practical syllabus, Model question paper & Guide lines to the Paper setters for III & IV Semesters of II B.Sc (BZC) for the academic year 2018-19.

3. To recommend the syllabi (Theory & Practical), Practical syllabus, Model question paper & Guide lines to the Paper setters for V & VI Semesters of III B. Sc (BZC) for the academic year 2018-19.

4. To discuss to the syllabus of Elective & Clusters in VI semester to be for the academic year 2018-19.

5. To recommend the Guide lines to be followed by the question papers setters in Botany for I,II,III,IV,V&VI Semester –End exams.
6. To introduced a certificate course - Mushroom culture for B.Z.C students in this academic year of 2018-19.
7. To recommend the teaching and evolution methods to be followed under Autonomous statues.

8. Any other matter.

CH. Beulah Panjam
Chairman

RESOLUTIONS

1. It is resolved to continue the same syllabi (Theory & Practical), model question paper & guide lines to be followed by the question paper setters of Botany of I & II semesters of I B.Sc. (B.Z.C) under Choice Based Credit System (CBCS) approved by the Academic Council of 2018 – 19.
2. It is resolved to implement the syllabi (Theory & Practical), model question paper & guide lines to be followed by the question papers under Choice Based Credit System (CBCS) setters of Botany of III & IV semesters of II B.Sc. (B.Z.C) approved by the Academic Council of 2018 – 19.
3. It is resolved to implement the same syllabi & model papers under Choice Based Credit System (CBCS) setters of Botany of III & IV semesters of II B.Sc. (B.Z.C) approved by the Academic Council of 2018 – 19.
4. It is resoled to follow Elective-AC (Plant tissue culture and its Biotechnological applications) and Cluster –B (plant Diversity and human welfare, Ethno Botany and Medicinal Botany, Pharmacognosy and phyto chemistry.) In VI Semester from the Academic year 2018-19.
5. It is resolved to Continue the same Blue prints of I,II,III,IV,V & VI Semesters of B. Sc Botany for the Academic year 2018-19.
6. It is resolved to
7. It is resolved to continue the following teaching and evolution methods for the Academic year 2018-19.
8. Any other matter.

Teaching methods:

Besides the conventional methods of teaching, we use modern technology i.e. Using of OHP and LCD projector to display on U boards etc; for better understanding of concepts.

Evaluation of a student is done by the following procedure:

- There are two components in the Valuation and Assessment of a student – Internal Assessment (IA) and Semester Examinations (SE).
  (For the Batch of Students Admitted from 2018-2019 – UG)

Internal Assessment (IA):

- The maximum mark for IA is 30 and SEM is 70 for theory; and for practical papers 50.
- Each IA written examination is of 1 hour's duration for 20 marks. The tests will be conducted centrally. The average of two such IA is calculated for 20 marks.
- Other Innovative Components will be for 5 Marks. The innovative component is for 5 marks, conducted during the class hours by the staff member/ in charge of the subject, in the form of assignments/ quiz/ seminars /ppt/Online- assignments/Open Book/Viva Voce/ Group work/ Mini Project/ Exhibition, etc. The topic and time for submission/ presentation will be announced by the staff member/ in charge of the subject in advance. Each student should explain and defend his/her presentation. For attendance 5 Marks are allotted.

- The semester examination will be of 3 hours with maximum 70 marks.
- There is no passing minimum for IA.

Semester Examinations (SE):

- A student should register himself/herself to appear for the Semester Examinations by payment of the prescribed fee.
- The Semester Examinations will be in the form of a comprehensive examination covering the entire syllabus in each subject. It will be of 3 hours duration & Foundation course 2 hours irrespective of the number of credits allotted to it.
- If a candidate fails to obtain pass marks even after the due to less mark in the IA examination, the marks of the next examination will be converted to be out of 100.
- Even though the candidate is absent for two IA exams/obtain zero marks the external marks are considered (if he/she gets 40/70) and the result shall be declared as 'PASS'
- The maximum marks for each Paper shall be 100.

Evaluation of a student is done by the following procedure:

I. Internal Assessment Examinations:

- Out of maximum 100 marks in each paper, 30 marks shall be allocated for internal assessment.
- Out of these 30 marks, 15 marks are allocated for announced tests. Two announced tests will be conducted and average of these two tests shall be deemed as the marks obtained by the student, 5 marks are allocated on the basis of candidate's percentage of attendance, 5 marks for seminars & remaining 5 marks for assignments to the Semesters I, II. For the III , IV , V & VI semesters it is resolved to continue the same as approved by Academic Council in 2017 -18.

II. Semester-End Examinations:

- The maximum marks for II & III B.Sc (BZC) Semester-End examinations shall be 75 marks and duration of the examination shall be 3 Hours.
- Semester-End examinations shall be conducted in theory papers at the end of every semester while in practical papers, these examinations are conducted at end of I, II, III, IV, V & VI semesters.
- Discussed and recommended for organizing Seminars, Guest lectures, Work-shops to upgrade the knowledge of students, for the approval of the Academic Council.

Chairman

A.G & S.G. Siddhartha Degree College of Arts & Science

An autonomous college in the jurisdiction of Krishna University

BOTANY	BOT- 101C	w.e.f. 2018-19	B. Sc. (BZC)

SEMESTER - I **PAPER - I**

Total hours of teaching 60 hrs @ 4 hrs per week Credits: 4

Microbial Diversity, Algae and Fungi

UNIT- I: Origin and Evolution of Life, Microbial diversity (12 hrs)

1. Origin of life –theories introduction; Lamarckism, Darwinism and Neo Darwinism.
2. Geological time scale
3. Microbial diversity-Mycoplasma – Chlamydia -Archaebacteria –Actinomycetes

UNIT- II: VIRUSES AND BACTERIA (12 hrs)

1. Viruses: General account of Viruses, structure, replication and transmission of plant diseases caused by Viruses.
2. Bacteria**:** Structure, nutrition, reproduction and economic importance. Outlines of plant diseases of important crop plants caused by Bacteria (Citrus canker, leaf blight of rice, Angular leaf spot of Cotton) and their control.

UNIT III: CYANOBACTERIA AND LICHENS (12 hrs)

1. Cyanobacteria: General account of cell structure, thallus organization and their uses as Biofertilizers.
2. Structure, reproduction and life history of *Nostoc* and *Scytonema.*
3. Lichens – Morphology –Anatomy –Reproduction –Economic importance.

UNIT –IV Algae (12 hrs)

1. General account, Fritsch classification of Algae and economic importance.
2. Structure, reproduction, life history of *Oedogonium, Vaucheria* and *Ectocarpus.*

UNIT V: FUNGI (12 hrs)

1. General characters, classification (Alexopolous) and economic importance.
2. Structure, reproduction and life history of *Albugo, Penicillium, Puccinia.*
3. General account of plant diseases caused by Fungi (Late blight of potato, Red rot of Sugarcane and Paddy blast) and their control.

I B.Sc – BOTANY

Paper Code: BOT- 101 C **THEORY MODEL PAPER** **SEMESTER- I**

Paper-I: Microbial Diversity, Algae and Fungi

Time: 3 Hours **Max. Marks: 70**

Pass Mark: 28

SECTION-A (Short Answer Questions)

Answer any *Five* of the following questions. **5x4=20M**

1. Mycoplasma
2. Actinomycetes.
3. Struggle for existence.
4. Transformation.
5. Morphology of *Scytonema*.
6. Plurilocular sporangia.
7. Economic importance of *Penicillium*.
8. Red rot of Sugarcane

SECTION-B (Essay Questions)

Answer any *five* of the following questions. **5x10=50M**

9. Write an essay on geological time scale.
10. Write an essay on the cell structure and nutrition in bacteria.
11. Describe the structure & replication of Virus.
12. Write an essay on Cyanobacteria as Biofertilizers.
13. Describe the morphology and economic importance of Lichens.
14. Describe the life history of macrandrous species in *Oedogonium*.
15. Describe the life history of *Vaucheria.*
16. Write about the life history of Macrocyclic heterogenous rust.

Guide lines for paper setter: (for Paper I – BOT- 101C) w.e.f. 2018-19.

1. In **section A**: Unit II, III &IV must carry **ONE** question from each Unit and Unit V must carry **TWO** questions and Unit I must carry **THREE** questions.
2. In **section- B**: **ONE** question each from Unit I &III and **TWO** questions each from Unit II, IV & V.
3. See the following table and Model paper for marks distribution.
4. Please provide the scheme of valuation for the paper.
5. Question paper should be both in English and Telugu media.

Unit	Section - A		Section - B		Weightage in
	Questions	Marks	Questions	Marks	Marks
Unit – I	3		1		
		12		10	22
Unit - II	1		2		
		4		20	24
Unit – III	1		1		
		4		10	14
Unit – IV	1		2		
		4		20	24
Unit – V	2		2		
		08		20	28
Max. Q & marks	8	(x 4) = 32	8	(x 10) = 80	(Total questions =16) Total marks = 112
Max. Q and marks for Valuation	Questions	Marks	Questions	Marks	Max. marks
	5		5		
		(5 X 4) = 20		(5 X 10) = 50	70

INTERNAL EXAMS – 30 Marks

(15 marks for unit tests, **5 marks** for assignments, **5marks** for attendance, **5marks** for seminars).

A.G & S.G. Siddhartha Degree College of Arts & Science

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BOTANY	BOT- 201C	w.e.f.2018-19	B. Sc. (BZC)

I B. Sc - BOTANY SYLLABUS

PAPER CODE : BOT – 201C **SEMESTER- II**

Paper II: ***Diversity of Archaegoniatae & Plant Anatomy***

Total hours of teaching 60 hrs @ 4 hrs per week **Credits: 4**

UNIT – I: BRYOPHYTA (14 hrs)

1. Bryophyta: General characters and classification (up to classes only).

2. Structure, reproduction and Life history of *Marchantia* and *Polytrichum*.

3. Evolution of Sporophyte in Bryophytes.

UNIT - II: PTERIDOPHYTA (14 hrs)

1. Pteridophyta: General characters and Classification (up to classes only).

2. Structure, reproduction and life history of *Lycopodium* and *Marsilea*.

3. Heterospory and seed habit

4. Stelar Evolution in Pteridophytes

UNIT – III: GYMNOSPERMS (12 hrs)

1. Gymnosperms: General characters and classification (up to classes only).

2. Morphology, Anatomy, reproduction and life history of *Pinus* and *Gnetum*.

UNIT – IV: Tissues and Tissue systems (10 hrs)

1. Tissues: Meristematic and permanent tissues (Simple and Complex).

2. Shoot apical meristems and its histological organization.

3. Root apical meristems and its histological organization.

UNIT –V: Secondary growth. (10 hrs)

1. Anomalous secondary growth in *Dracaena, Boerhaavia* and *Bignonia*.

2. Wood structure- general account, Study of local timbers Teak, Rosewood, Red sanders and *Terminalia tomentosa*.

I B. Sc – BOTANY Model Question Paper

Paper Code: ***BOT - 201*** **SEMESTER- II**

PAPER-II*: Diversity of Archaegoniatae & Plant Anatomy*

Time: 3 Hours **Max. Marks: 70**

Pass Mark: 28

(*Draw diagrams wherever necessary*)

SECTION-A (Short Answer Questions)

Answer any **five** of the following question **5x4=20Marks**

1. Gemma Cup.
2. Cone of *Lycopodium*
3. *Pinus* ovuliferous scale
4. Collenchyma.
5. Tunica – Corpus theory.
6. Phloem.
7. Botanical name, family and uses of Teak.
8. Botanical name, family and the properties of wood of Red sanders.

SECTION-B

Answer any **five** of the following questions**:** **5x10=50Marks**

9. Write an essay on Evolution of sporophyte in Bryophytes.
10. Describe Sexual reproduction in *Polytrichum.*
11. Write an essay on the Stelar evolution in Pteridophytes.
12. Describe the structure of the sporocarp of *Marselia*.
13. Describe the internal structure of the *Pinus* needle & Mention its xerophytic characters.
14. Describe the female gametophyte in *Gnetum*.
15. Describe various theories regarding the organization of Root apex.
16. Give an account of the Anomalous secondary growth in *Boerhaavia*.

Guide lines for paper setter: (for Paper II – BOT- 201C) w.e.f. 2018-19.

1. In **section A**: Unit I, II & III must carry **one** question from each Unit, Unit IV must carry **Three** questions and Unit V must carry **two** questions.
2. In **section- B**: Set minimum **two** questions from Unit I, II & III. **One** question each from Unit IV and Unit V.
3. See the following table and Model paper for marks distribution.
4. Please provide the scheme of valuation for the paper.
5. Question paper should be both in English and Telugu media.

Unit	Section - A		Section - B		Weightage in
	Questions	Marks	Questions	Marks	Marks
Unit – I	1		2		
	04		20		24
Unit - II	1		2		
	04		20		24
Unit – III	1		2		
	04		20		24
Unit – IV	3		1		
	12		10		22
Unit – V	2		1		
	08		10		28
Max. Q & marks	5 (x 4) = 20		5 (x 10) = 50		(Total questions =16) Total marks = 112
Max. Q and marks for Valuation	Questions	Marks	Questions	Marks	Max. marks
	5		5		
	(5 X 4) = 20		(5 X 10) = 50		70

INTERNAL EXAMS – 30 Marks

(15 marks for unit tests, **5 marks** for assignments, **5marks** for attendance, **5marks** for seminars).

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BOTANY	BOT-301C	w.e.f. 2018-19	B. Sc. (BZC)

II B. Sc - BOTANY

SEMESTER - III PAPER – III

Plant Taxonomy and Plant Physiology

Hours: 60 @ 4 hrs per week -

UNIT – I: Introduction to Plant Taxonomy (12 hrs)

1. Fundamental components of taxonomy (identification, nomenclature, classification types and phylogeny)
2. Salient features and comparative account of Bentham & Hooker and Engler & Prantl's classification.
3. Role of chemotaxonomy, cytotaxonomy and taximetrics in relation to Taxonomy.

UNIT –II: Systematic Taxonomy (12 hrs)

1. Nomenclature and Taxonomic resources: An introduction to International Code of Botanical Nomenclature; Principles, Rules and Recommendations.
2. Systematic study and economic importance of plants belonging to the following families: Annonaceae, Capparidaceae, Rutaceae, Cucurbitaceae and Apiaceae

UNIT –III: Systematic Taxonomy (12 hrs)

1. Systematic study and economic importance of plants belonging to the following families: Asteraceae, Asclepiadaceae, Lamiaceae, Euphorbiaceae, Orchidaceae and Poaceae.

Plant Physiology

UNIT – IV: Plant – Water relations (12 hrs)

1. Importance of water to plant life, physical properties of water,
2. Diffusion, Imbibition and osmosis; water potential, osmotic potential and pressure potential.
3. Absorption, transport of water, ascent of sap.
4. Transpiration – types, stomata structure, movements and significance.

UNIT –V: Mineral nutrition and Fertilizers (12 hrs)

1. Mineral Nutrition**:** Essential macro and micro mineral nutrients and their role, mineral uptake (active and passive), deficiency symptoms.
2. Nitrogen cycle- biological nitrogen fixation.
3. Enzymes**:** Nomenclature, characteristics, mechanism and regulation of enzyme action, enzyme kinetics, factors regulating enzyme action.

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BOTANY	BOT- 301	w.e.f. 2018-19	B. Sc. (BZC)

II B. Sc – BOTANY **Model Question Paper** **SEMESTER- III**

Paper Code: BOT - 301 **Max. Marks: 75**

PAPER-III: Plant Taxonomy and Plant Physiolog

Time: 3 Hours **Pass Marks: 30**

(*Draw diagrams wherever necessary*)

SECTION-A (Short Answer Questions)

Answer any **five** of the following questions. **5x5=25Marks**

1. Binomial nomenclature.
2. Cytotaxonomy.
3. Fruit in Rutaceae.
4. Pollination mechanism in Lamiaceae.
5. Water potential.
6. Types of Transpiration.
7. Imbibition.
8. Nitrogen.

SECTION-B

Answer any **five** of the following questions**.** **5x10=50Marks**

9. Explain in brief Bentham & Hookers system of classification. Discuss the merits and demerits of the system.
10. Describe vegetative and floral characters of the family Cucurbitaceae.
11. Write an essay on ICBN.
12. Describe vegetative & floral characters of Asclepiadaceae.
13. Describe floral characters and economic importance of Euphorbiaceae.
14. Write an essay on Ascent of sap.
15. Write an essay on the absorption of mineral ions.
16. Explain the enzyme action and add a note on the factors that effect enzyme activity.

Guide lines for paper setter: (for Paper III – BOT- 301) w.e.f 2018-19

1. In **section A**: Unit II, III & V must carry **one** question from each Unit, Unit I must carry **two** questions and Unit IV must carry **three** questions.
2. In **section- B**: Set minimum **two** questions from Unit II, III & V. **One** question each from Unit I and Unit IV.
3. See the following table and Model paper for marks distribution.
4. Please provide the scheme of valuation for the paper.
5. Question paper should be both in English and Telugu media.

Unit	Section - A		Section - B		Weightage in
	Questions	Marks	Questions	Marks	Marks
Unit – I	2		1		
		10		10	20
Unit - II	1		2		
		05		20	25
Unit – III	1		2		
		05		20	25
Unit – IV	3		1		
		15		10	25
Unit – V	1		2		
		05		20	25
Max. Q & marks	8 (x 5) = 40		8 (x 10) = 80		(Total questions =16) Total marks = 120
Max. Q and marks for Valuation	Questions	Marks	Questions	Marks	Max. marks
	5 (5 X 5M) = 25 M		5 (5 X 10M)= 50 M		75M

[**INTERNAL EXAMS - 25Marks (15** marks for unit tests, **5** marks for assignments and remaining **5** marks for attendance.)]

II B.Sc - BOTANY PRACTICAL SYLLABUS (w.e.f. 2)

PAPER-III **SEMESTER-III** **(BOT- 301P)**

Practical – III: **Plant Taxonomy and Plant Physiology**

Total hours of laboratory Exercises 45 hrs @ 3 per week

Suggested Laboratory Exercises:

1. Systematic study of locally available plants belonging to the families prescribed in theory Syllabus.
2. Demonstration of herbarium techniques.
3. Osmosis – by potato osmoscope method.
4. Determination of osmotic potential of vacuolar sap by plasmolytic method using leaves of *Rhoeo* / *Tradescantia*.
5. Determination of rate of transpiration using cobalt chloride method.
6. Demonstration of transpiration by Ganong's potometer.
7. Demonstration of ascent of sap / Transpiration pull.
8. Study of mineral deficiency symptoms using plant material/photographs.
11. Field visits.
12. Preparation and submission of 25 herbarium specimens for evaluation during the practical Examination.

II B.SC BOTANY PRACTICAL EXAM (BOT-301P) w.e.f. 2018-19

Time: 3 Hrs. Max. Marks: 50

External Marks: 35

Plant Taxonomy and Plant Physiology

1. Describe specimen 'A' in technical terms. Draw neat labelled diagrams of twig with inflorescence, L.S of flower, T.S. of ovary, floral diagram and write the floral formula. 11M
2. Assign the Specimen 'B' to its family giving reasons. 3M
3. Write the salient features of experiment 'C' with the help of neat labelled diagram. 05M
4. Identify D &E. 03M
5. Herbarium. 03M

Total 25M

Internal :
(Attendance – 5 M + Record -10M + Field trip diary – 5M + Viva – 5M)

Total -----50M

Scheme of valuation for II B.Sc **Botany practical Exam**

Time: 3 Hrs. **External Marks: 25**

1. Material 'A' - A twig with large sized flowers. (From the families mentioned in practical syllabus)
- Description of veg. parts = 2 M; Description of floral parts = 4 M; One mark each for the diagrams of Twig with flower, L.S. of flower, T.S of ovary, Floral diagram and Floral formula.
Total = 11 M

2. Material 'B' – (Family name - 1, Identification with reasons - 2) Total = 03M
3. Material 'C' –Physiology –minor experiment
   Salient features 3M
   Diagram ..... 2M =05M
4. 'D' & 'E'(2 Herbarium sheets from students collection) Total = 03M

   [for each one, Botanical name - 1, Family – ½]

5. Herbarium. = 03 M

Total = 25 M

Internal : **25M**
(Attendance – 5 M + Record -10M + Field trip diary – 5M + Viva – 5M)

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BOTANY	BOT-401	w.e.f. 2018-19	B. Sc. (BZC)

II B. Sc - BOTANY SYLLABUS

SEMESTER - IV PAPER – IV Hours: 60 @ 4 hrs per week

Plant Embryology and Plant Metabolism

UNIT – I: EMBRYOLOGY (12hrs)

1. Introduction: History and Importance of Embryology.
2. Anther structure, Microsporogenesis and development of male gametophyte.
3. Ovule structure and types; Megasporogenesis; Monosporic; Bisporic and Tetrasporic types of female gametophyte / embryosac development.
4. Pollination -Types, Fertilization.

UNIT –II: EMBRYOLOGY AND PALYNOLOGY (12 hrs)

1. Endosperm Development and types.
2. Embryo - development and types.
3. Polyembryony and Apomixis - an outline.
4. Palynology: Principles and applications.

UNIT –III: PLANT METABOLISM- I (12 hrs)

1. Photosynthesis: Electromagnetic spectrum, absorption and action spectra; Red drop and Emerson enhancement effect, concept of Z scheme in photosystems, Photosynthetic pigments, mechanism of photosynthetic electron transport and evolution of oxygen, photo phosphorylation, carbon assimilation pathways: C_3, C_4 & CAM and Photorespiration.
2. Translocation of organic substances: Mechanism of phloem transport, source-sink relationships.

UNIT –IV: PLANT METABOLISM- II (12 hrs)

1.Respiration: Aerobic and Anaerobic, Glycolysis, Krebs cycle, electron transport system, mechanism of oxidative phosphorylation, pentose phosphate pathway.

2. Lipid Metabolism**:** Structure and functions of lipids, conversion of lipids to carbohydrates, Beta-oxidation.

UNIT –V: GROWTH AND DEVELOPMENT (12 hrs)

1. Growth and development: Definition, phases and kinetics of growth, Physiological effects of phytohormones - auxins, gibberellins, cytokinins, ABA and ethylene
2. Physiology of flowering and photoperiodism, role of phytochrome in flowering.
3. Stress Physiology: Concept and plant responses to water, salt and temperature stresses.

Suggested Reading

1. The embryology of angiosperms - Bhojwani S.S., Bhatnagar S.P. - Vikas publishing house private Ltd, New Delhi.

2. An introduction to the embryology of angiosperms - Maheswari. P - Tata Mac graw hill company Ltd, New Delhi.

3. Plant physiology - Taiz. L. and E. Zeizer - Sinauer Associates, Inc., publishers. Massachusetts, USA.

4. Introduction to Plant physiology - Hopkins - John Wiley and sons lnc., New York, USA.

5. Plant physiology - Salisbury. F.B. and C.W. Ross - Wordsworth Learning lnc., USA.

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BOTANY	BOT- 401	w.e.f. 2018-19	B. Sc. (BZC)

II B. Sc – BOTANY Model Question Paper

Paper Code: BOT - 401 **SEMESTER- IV**

PAPER-IV*:* Plant Embryology and Plant Metabolism

Time: 3 Hours Max. Marks: 75

Pass Mark: 30

(*Draw diagrams wherever necessary*)

SECTION-A (Short Answer Questions)

Answer any **five** of the following questions **5x5=25Marks**

1. Microsporogenesis.
2. Allogamy.
3. Helobial endosperm.
4. Emerson enhancement effect.
5. Anaerobic respiration.
6. Ethylene.
7. Photoperiodism.
8. Phytochrome.

SECTION-B

Answer any **five** of the following questions. **5x10=50Marks**

9. What is an Embryosac? Describe any five of the tetrasporic type of Embryosac developments.
10. Give an account of Polyembryony.
11. Write an essay on the Principles and applications of Palynology.
12. Describe the carbon assimilation pathway in C4 plants.
13. Write an essay on the Translocation of organic substances in higher plants.
14. Describe various reactions of Krebs cycle.
15. W rite an essay on various types of Lipids.
16. Give an account of Auxins and Gibberellins.

Guide lines for paper setter: (for Paper IV – BOT- 401) w.e.f. 2018-19

1. In **section A**: Unit II, III & IV must carry **one** question from each Unit, Unit I must carry **two** questions and Unit V must carry **three** questions.

2. In **section- B**: Set minimum **two** questions from Unit II, III & IV.

   One question each from Unit I and Unit V.

3. See the following table and Model paper for marks distribution.
4. Please provide the scheme of valuation for the paper.

5. Question paper should be both in English and Telugu media.

Unit	Section - A		Section - B		Weightage in
	Questions	Marks	Questions	Marks	Marks
Unit – I	2		1		
		10		10	20
Unit - II	1		2		
		05		20	25
Unit – III	1		2		
		05		20	25
Unit – IV	1		2		
		05		20	25
Unit – V	3		1		
		15		10	25
Max. Q & marks	8 (x 5) = 40		8 (x 10) = 80		(Total questions =16) marks = 120
Max. Q and marks for Valuation	Questions	Marks	Questions	Marks	Max. marks
	5		5		
	(5 X 5) = 25		(5 X 10) = 50		75

[**INTERNAL EXAMS - 25Marks**

(15 marks for unit tests, **5** marks for assignments and remaining **5** marks for attendance.)]

II B. Sc – BOTANY SEMESTER- IV. PRACTICAL SYLLABUS

PAPER- IV - Plant Embryology and Plant Metabolism (BOT – 401)

Total hours of laboratory Exercises 45 hrs @ 3 per week . w.e.f. 2018-19

Suggested Laboratory Exercises:

1. Structure of pollen grains using whole mounts (*Catharanthus, Hibiscus,Acacia*, Grass).
2. Demonstration of Pollen viability test using *in- vitro* germination (*Catharanthus*).
3. Study of ovule types and developmental stages of embryo sac using permanent slides / Photographs.
4. Structure of endosperm (nuclear and cellular); Developmental stages of dicot and monocot Embryos using permanent slides / Photographs.
5. Isolation and mounting of embryo (using *Symopsis / Senna* / *Crotalaria*).

Major experiments:

6. Separation of chloroplast pigments using paper chromatography technique.
7. Rate of photosynthesis under varying CO_2 concentration.
8. Effect of kind of light intensity on oxygen evolution during photosynthesis using Wilmontt' bubbler.
9. Titratable acidity estimation of Lemon or Tamarind leaves.

Minor experiments:

10. Release of CO_2 in Aerobic respiration.
11. Demonstration of the process of fermentation using Kuhne's fermentation vessel.
12. Demonstration of Phototropism.
13. Measuring the Plant growth using Arc Auxanometer.

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II BSc Botany Practical Exam (w.e.f. 2018-19)

IV Semester Practical – IV **(BOT-401P)**

Plant Embryology and Plant Metabolism

External Marks: 25 **Model Paper** Time: 3 Hrs. **Max.Marks:50**

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1. Conduct experiment 'A', write down the procedure and conclusions.

   Tabulate the results if any……..11M

2. Write the salient features of experiment 'B' with the help of neat labelled diagram. 05M

3. Identify and write notes on 'C, D & E' (3X3M) 09M

Total marks for external exam …… 25M

Practical – IV **Scheme of valuation** **(BOT-401P)**

1. 'A' –Physiology –major experiment
   Setting and conducting of the experiment 6M
   Procedure 3M
   Conclusion and tabulation .....2M = 11M
2. 'B'- Physiology –minor experiment
   Salient features 3M
   Diagram .....2M = 05M
3. 'C' from Anther T.S / Pollen grains. ..... = 03M
   'D' - Slide from types of Ovules. ..... = 03M
   'E'– Slide from Embryosacs / Embryos. ..... = 03M
   (Identification - 1 + Diagram-1 + Notes- 1 =Total = 3marks for each)
   (**Total marks for external exam** …… **25M)**

Internal:

a) Record 10M
b) Internal Practical Exam/ Self study project report. 05M
c) Attendance 05M
d) Viva 05M

Grand Total 50M

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BOTANY	BOT-501	2018-19	B.Sc. (BZC)

PAPER – V **SEMESTER-V (**2018-19**)**

Cell Biology, Genetics and Plant Breeding Credits:03

Total Hours of teaching 60 hrs @ 6 hrs for Week

UNIT-I Cell Biology

1. Cell, Ultra Structure and functions of cell wall.

2. Molecular Organization of cell membranes.

3. Chromosomes; morphology, organization of DNA in a chromosome (Nucleosome model)Euchromatin and Heterochromatin.

UNIT-II Genetic Material

1. DNA as the Genetic Material: Griffith's and Avery's Transformation Experiment. Hershey - Chase Bacteriophage experiment.
2. DNA Structure (Watson & crick model) and replication of DNA (Semi Conservative).
3. Types of RNA (mRNA, tRNA, rRNA), their structure and function.

UNIT-III Mendelian Inheritance

1. Mendelian Inheritance (Mono – Di-hybrid Crosses), Back cross and Text cross.

2. Linkage: concept, complete and In-complete Linkage, Coupling and Repulsion; Linkage Maps Based on Two and Three Point cross.

3. Crossing over concept and significance.

UNIT-IV Gene Expression

1. Organization of gene, Transcription and Translation.
2. Mechanism and regulation of Gene Expression in Prokaryotes (Lac operas).
3. Mutations: Chromosomal Aberrations, Gene Mutations and Transposable Elements.

UNIT-V Plant Breeding

1. Introduction and objectives of Plant Breeding.

2. Methods of Crop Improvement: Procedure, Advantages and limitations of Introduction, Selection and Hybridization (Out lines only).

B.Sc – BOTANY

SEMESTER-V: THEORY MODEL PAPER BOT-501

Time: 3 Hours **Max. Marks:75**

SECTION-A

Answer any five of the following question **5x5=25M**

1.
2.
3.
4.
5.
6.
7.
8.

SECTION-B

Answer any FIVE of the following questions **5x10=50M**

9.
10.
11.
12.
13.
14.
15.
16.

Guide lines for paper setter: (for Paper V-BOT-501) W.e.f. 2018-19

1. In Section A: Unit I, III, V must carry one question from each unit. Unit II must carry 2 questions and Unit IV must carry three questions.
2. In section-B: Set minimum Two questions from Unit I, II & III
3. See the following table and Model paper.
4. Please provide the scheme of valuation for the paper.
5. Question paper should be both in English and Telugu media.

Unit	Section - A		Section - B		Weightage in
	Questions	Marks	Questions	Marks	Marks
Unit – I	1		2		
		5	20		25
Unit – II	2		2		
		10	20		30
Unit –III	1		2		
		5		20	25
Unit-IV	3		1		
		15		10	25
Unit-V	1		1		
		5		10	15
Max .Q & marks	8	(x 5) =40	8	(x 10) = 80	(Total questions =16) Marks 120
Max. Q and marks for Valuation	Questions	Marks	Questions	Marks	Max. marks
	5		5		
		(5 x 5) = 25		(5 x 10) = 50	75

INTERNAL EXAMS - 25Marks

(20 marks for unit tests, **5** marks for assignments 5marks for Attendance **5** marks for seminar remaining 5 marks for Objective type quections)

III B.SC-BOTANY Practical paper

Cell Biology, Genetics and Plant Breeding

SEMESTER-V **BOT-501-P**

Time :3hrs Max.marks:50

Total hours of teaching 30hrs @ 2 hrs per week

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1. Study of the structure of cell organelles through photomicrographs.
2. Study of plant cell through temporary mounts.
3. Study of various stages of mitosis using cytological preparation of Onion root tips.
4. Study of DNA packing by micrographs.
5. Numerical problems solving Mendal's Laws of inheritance.
6. Chromosome mapping using 3 point test cross data.
7. Hybridization techniques –emasculation. Bagging (for demonstration only).
8. Field visit to a plant breeding research station.

III B.SC-SEMESTER-V, BOTANY PRACTICAL MODELPAPER

PAPER –V: CELL BIOLOGY GENETICS AND PLANT BREEDING

1. Perform the Experiment A Squash technique…….....12marks
2. Give the experimental protocol of the experiments. B……..4M
3. Solving numerical problems on Mendelian in heritance. C.D 2x71\2=15 marks
4. Record……5marks.

Viva……4marks.

Internal Practical Exam……..10M

III B.SC-BOTANY Syllabus SEMESTER-V

Practical paper – V: Cell Biology, Genetics and Plant Breeding

Total hours of teaching 30hrs @ 2 hrs per week

1. Perform the Experiment A.

Squash technique …….4M

Procedure…….……4M

diagram ……2M =10

2. Give the experimental protocol of the experiments. B……..4M

3. Genetic problem C, D

Salvation of problem…… 5M

Reasoning…….2M

2X71\2=15M

Viva …….4M

Internal:

a) Record……5 M.

b)Internal Practical Exam……...10M

Books for Reference:

1. Old, R.W. and Primrose S.B. 1994, Principles of Gene Manipulation Blackwell Science,19 London 2. Grierson, D. and Convey S.N. 1989, Plant Molecular Biology, Blackie Publishers, NewYork.

2. Lea, P.J. and Leegood R.C. 1999, Plant Biochemistry and Molecular Biology, John Wiley and Sons, London.

3. Power C.B., 1984, Cell Biology, Himalaya Publishing Co. Mumbai

4. De. Robertis and De Robertis, 1998, Cell and Moleceular Biology, K.M. Verghese andCompany .

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BOTANY	BOT-502	2018-19	B.Sc. (BZC)

SEMESTER-V (2017-2018) **PAPER – VI**

PLANT ECOLOGY & PHYTOGEOGRAPHY Credits-03

Total Hours of teaching 60 hrs @ 6 hrs for Week

UNIT-I.ELEMENTS OF ECOLOGY

1. Ecology: Definition, branches and significance of ecology.

2. Claimatic factors: Light, Temperature.

3. Edaphic factor: Origin, formation, composition and soil profile.

4. Biotic factor, Ecological adaptations of Plants.

Unit– II. Ecosystem Ecology

1. Ecosystem: concept and components, energy flow, food chain, food web, Ecological Pyramids.
2. Productivity of ecosystem-Primary, Secondary and Net productivity.
3. Biogeochemical cycles- Carbon, Nitrogen and Phosphorous.

Unit –III Population & Community ecology.

1. Population-defination, characteristics and importance (Density,Natality, Mortality, Growth Curves) outlines-ecotypes.
2. Plant communities- characters of a community, outlines – Frequency, density, cover, life forms, Biological Spectrum.
3. Ecological Succession: Hydrosere and Xerosere

Unit-IV Phytogeography

1. Principles of Phytogeography, Distribution (Wides, Endemic, Discontinous species.

2. Phytogeographic regions of India.

3. Endemism – types and Causes.

Unit-V Plant Biodiversity and its Importance

1. Definition, Levels of Biodiversity – genetic, species and ecosystem.

2. Biodiversity and Hot-spots of India: North Eastern, Himalayas and Western Ghats.

3. Loss of Biodiversity-causes and Conservation (In-situ and Ex-Situ Methods).

B.Sc – BOTANY

SEMESTER-VI: THEORY MODEL PAPER BOT-601

Time: 3 Hours Paper VII C (el) Max. Marks:75

SECTION-A

Answer any five of the following question 5x5=25M

1.
2.
3.
4.
5.
6.
7.
8.

SECTION-B

Answer any FIVE of the following questions 5x10=50M

9.
10.
11.
12.
13.
14.
15.
16.

Guide lines for paper setter: (for Paper V-BOT-501) W.e.f. 2018-19

1. In Section A: Unit I, II, III, must carry Two question from each unit. Unit IV, V must carry one question.
2. In section-B: Set minimum two questions from Unit I, II & III and Set One Question from IV, V.
3. See the following table and Model paper.
4. Please provide the scheme of valuation for the paper.
5. Question paper should be both in English and Telugu media.

Unit	Section – A		Section - B		Weightage in
	Questions	Marks	Questions	Marks	Marks
Unit – I	2		2		
	10		20		30
Unit – II	2		2		
	10		20		30
Unit – III	2		2		
	10		20		30
Unit-IV	1		1		
	5		10		15
Unit-V	1		1		
	5		10		15
Max. Q & marks	8 (x 5) = 40		8 (x 10) = 80		(Total questions = 16) Marks 120
Max. Q and marks for Valuation	Questions	Marks	Questions	Marks	Max. marks
	5		5		
	(5 x 5) = 25		(5 x 10) = 50		75

INTERNAL EXAMS - 25Marks

(15 mark for unit tests, 5 marks for assignments and remaining 5 marks for seminar etc.)

BOTANY PRACTICAL

PLANT ECOLOGY& PHYTOGEOGRAPHY

SEMESTER- V BOT-502-P

Total hours of teaching 30 hrs @ 3 hrs per week

==========

1. Study of instruments used to measure microclimatic variables; soil thermometer, maximum and minimum thermometer, anemometer, psychomotor, rain gauze, and lux meter.

2. Permeability (percolation; total capacity as well as rate of movement) of different soil samples.

3. Determination of soil pH

4. Study of morphological and anatomical adaptations of hydrophytes and xerophytes. (4each)

5. Determination of minimal quadrate size for the study of herbaceous vegetation in the college campus by species area curve method.

6. Study of Phytoplankton and macrophysics from water bodies.

7. Study of species diversity index of vegetation.

8. Estimation of Primary Productivity of an ecosystem.

9. To study field vegetation with respect to stratification, canopy cover and composition.

10. Study of plants included in agro forestry and social forestry.

11. To locate the hotspots, phyto geographical regions and distribution of endemic plants in the map of India.

12. The following practical should be conducted in the Field/lab with the help of Photographs, herbarium, Floras, Red data book- Study of endangered plants species, critically endangered plants species, vulnerable plant species and monotypic endemic genera of India.

BOTANY PRACTICAL

PLANT ECOLOGY& PHYTOGEOGRAPHY

SEMESTER- V BOT-502-P

Total hours of teaching 30 hrs @ 3 hrs per week

==========

1. Study Project under supervision…….……..... ..12 Marks
2. Experiment **A** …….…….. 07Marks
3. Anatomical adaptations of **B** (Section cutting)…….… 07Marks
4. Spotters **C&D …….**(2x2 1/2) = 5 Marks
5. Record…....…….……05Marks
6. Viva-Voc….....……...……04Mrks
7. Internal practical exam…….……10Marks

Total = 50 Marks

BOTANY PRACTICAL

PLANT ECOLOGY& PHYTOGEOGRAPHY

SEMESTER- V BOT-502-P

Scheme of Valuation

1. Study Project under supervision
   To study Honey Bees and Plants Yielding Honey ……..... 12 Marks

2. Experiment **A** -determination of soil porosity/PH…….…….. 07Marks

3. Anatomical adaptations of **B** (Section cutting)
   Xerophytes / Hydrophytes …….…….07Marks

4. Spotters **C&D** anemometer/rain gauze/lux meter **……..**(2x2 1/2) = 5 Marks

5. Viva-Voc…….....04Mrks

6. Record…....…….…….05Marks

7. Internal practical exam…….…….……10Marks

Total = 50 Marks

Books for Reference:

1. Daubenmire, R.F. ( ): Plants & Environment (2nd Edn.,) John Wiley & Sons., New York22

2. Puri, .G.S. (1960): Indian Forest Ecology (Vol.I & II) Oxford Book Co., New Delhi &Calcutta.

3. Billings, W.B. (1965): Plants and the Ecosystem Wadsworth Publishing Co., Inc., Belmont.

4. Misra, R. (1968): The Ecology work Book Oxford & INH Publishing Co., Calcutta

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BOTANY	BOT-601(GE)	2018-19	B.Sc. (BZC)

PAPER – VII – ELECTIVE-C **SEMESTER- VI**

Plant tissue culture and its biotechnological applications

Total hours of teaching 60hrs @ 6 hrs per week Credits: 3

Unit I: PLANT TISSUE CULTURE – 1 (12hrs)

1.History of plant tissue culture research - basic principles of plant tissue callus culture, meristems culture, organ culture, Totipotency of cells.

2. Methodology - sterilization (physical and chemical methods), culture media, Murashige and Skoog's (MS medium), phytohormones, medium for micro-propagation/clonal propagation of ornamental and horticulturally important plants.

3. Callus subculture maintenance, growth measurements, morphogenesis in callus culture – Organogenesis, somatic embryogenesis.

UNIT-II: Plant Tissue culture -2 (12hrs)

1. Endosperm culture – Embryo culture -culture requirements – applications, embryo rescue technique.
2. Production of secondary metabolites.
3. Cryopreservation; Germ plasm conservation.

Unit III: Recombinant DNA technology (12**hrs)**

1. Restriction Endonucleases (history, types I-IV, biological role and application); concepts of restriction mapping.
2. Cloning Vectors: Prokaryotic (pUC 18, pBR322, Ti plasmid and Lambda phage, Eukaryotic Vectors (YAC and briefly PAC)
3. Gene cloning (Bacterial Transformation and selection of recombinant clones, PCR Mediated gene cloning)
4. Construction of genomic and cDNA libraries, screening DNA libraries to obtain gene of interest by complementation technique, colony hybridization.

Unit IV: Methods of gene transfer (12hrs)

1. Methods of gene transfer- Agrobacterium-mediated, direct gene transfer by Electroporation, Microinjection, Micro projectile bombardment
2. Selection of transgenics– selectable marker and reporter genes (Luciferase, GUS, GFP).

Unit V: Applications of Biotechnology (12 hrs)

1. Applications of Plant Genetic Engineering – crop improvement, herbicide resistance, insect resistance, virus resistance.
2. Genetic modification – transgenic plants for pest resistant (Bt-cotton); herbicide resistance (Round Up Ready soybean); improved agronomic traits flavrSavr tomato, Golden rice); Improved horticultural varieties (Moon dust carnations).

Guide lines for paper setter: (for Paper VII -BOT-601) W.e.f. 2018-19.

1. In Section A: Unit I,III,IV must carry Two question from each unit. Unit II, V must carry one question.
2. In section-B: Set minimum two questions from Unit I, II, III and Set One Question from IV, V.
3. See the following table and Model paper.
4. Please provide the scheme of valuation for the paper.
5. Question paper should be both in English and Telugu media.

Unit	Section – A		Section - B		Weightage in
	Questions	Marks	Questions	Marks	Marks
Unit – I	2		2		
		10		20	30
Unit – II	1		2		
		5		20	25
Unit – III	2		2		
		10		20	30
Unit-IV	2		1		
		10		10	20
Unit-V	1		1		
		5		10	15
Max. Q & marks	8	(x 5) = 40	8	(x 10) = 80	(Total questions = 16) Marks 120
Max. Q and marks for Valuation	Questions	Marks	Questions	Marks	Max. marks
	5		5		
	(5 x 5) = 25		(5 x 10) = 50		75

INTERNAL EXAMS - 25Marks

(15 mark for unit tests, 5 marks for assignments and remaining 5 marks for seminar etc.)

Practical Paper VII-C

Plant Tissue Culture &Plant Biotechnology

SEMESTER- VI BOT – 601P

Total hours of teaching 30hrs @ 2hrs per week **Credits:2**

==========

1. (a) Preparation of MS medium.
   (b) Demonstration of in vitro sterilization methods and inoculation methods using leaf and nodal explants of Tobacco/ Datura/ Brassica etc.

2. Study of embryo and culture, micro propagation of Banana, somatic embryogenesis,artificial seeds through photographs.

3. Construction of restriction map of circular and linear DNA from the data provided.

4. Study of methods of gene transfer through photographs: Agrobacterium-mediated, directgene transfer by electroporation, microinjection, and micro projectile bombardment.

5. Different steps involved in genetic engineering for production of Bt. cotton, Golden rice, Flavr Savr tomato through photographs.

6. Isolation of plasmid DNA.

7. Restriction digestion and gel electrophoresis of plasmid DNA (optional)

8. Field visit to a lab involved in tissue culture

9. Study project under supervision of lecturer – tissue culture/ genetic engineering

Expected domain skills to be achieved: Ability to prepare artificial nutrient media, preparing independently, applying various sterilization procedures for media, glassware and biological materials, invitro propagation of Banana callus, morphogenesis--s, clonal propagation methods, isolation of plasmid DNA individually and as a group.

Practical Paper VII-C

Plant Tissue Culture &Plant Biotechnology

SEMESTER- VI BOT – 601(GE) P

Total hours of teaching 30hrs @ 2hrs per week **Credits: 2**

Q1. Project report (A) -……..... .10M
Viva-voce on study project…….…..02M

Q2. Identify and write notes on B, C and D (3x3)……..…...09 M
B- Tool/instrument/container used in sterilization
C- Tool/instrument/container used in gene transfer
D- GM crops (Photographs)

Q3.Construct restriction map of circular and/ or linear DNA from the data Provided……06M

Q 4. Field report…… ...03M

Total…… **30 Marks**

Internal Assessment

a. Record - ……..….05M
b. Attendance……05M
e. Internal practical exam……..10M

Total…… **20Marks**

Total ---------- 50M

Books for Reference:

1. Pullaiah. T. and M.V.Subba Rao. 2009. Plant Tissue culture. Scientific Publishers, New Delhi.

2. Bhojwani, S.S. and Razdan, M.K., (1996). Plant Tissue Culture: Theory and Practice. Elsevier Science Amsterdam. The Netherlands.

3. Glick, B.R., Pasternak, J.J. (2003). Molecular Biotechnology- Principles and Applications ofrecombinant DNA. ASM Press, Washington.

4. Bhojwani, S.S. and Bhatnagar, S.P. (2011). The Embryology of Angiosperms. VikasPublicationHouse Pvt. Ltd., New Delhi. 5th edition.

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III-BZC B. Sc	BOTANY-VIII	BOT-602 (CE)	2018-19

Paper – VIII-A-1: PLANT DIVERSITY AND HUMAN WELFARE **Credits**: 3
Total hours of teaching 60hrs @ 6hrs per week

Unit- I: Plant diversity and its scope: **(12hrs)**

1. Genetic diversity, Species diversity, Plant diversity at the ecosystem level,
2. Agro biodiversity and Vavilov Crop centers.
3. Values and uses of biodiversity: Ethical and aesthetic values, Uses of plants.

Unit -II: Loss of biodiversity: **(12hrs)**

1. Loss of genetic diversity, Loss of species diversity, Loss of ecosystem diversity, Loss of agro biodiversity, projected scenario for biodiversity loss.
2. Management of plant biodiversity: Organizations associated with biodiversity Management-Methodology for execution-IUCN, UNEP, UNESCO, WWF, NBPGR; Biodiversity legislation and conservations, Biodiversity information management and Communication.

Unit-III: Contemporary practices in resource management: **(12hrs)**

1. Environmental Impact Assessment (EIA), Geographical Information System GIS,
2. Solid and liquid waste management.

Unit -IV: Conservation of biodiversity **(12hrs)**

1. Conservation of genetic diversity, species diversity .
2. Social approaches to conservation, Biodiversity awareness Programmes, Sustainable development.

Unit- V: Role of plants in relation to Human Welfare **(12hrs)**

1 Importance of forestry, their utilization and commercial aspects-
a) Avenue trees, b) ornamental plants of India. c) Alcoholic beverages Through ages.
2 Fruits and nuts: Important fruit crops their commercial importance.
Wood, fiber and their uses.

B.Sc – BOTANY

SEMESTER-VI: THEORY MODEL PAPER BOT- 602 (CE)

Time: 3 Hours **Max. Marks:75**

SECTION-A (Short Answer Questions)

Answer any five of the following question **5x5=25M**

1.
2.
3.
4.
5.
6.
7.
8.

SECTION-B (Essay Questions)

Answer any five of the following questions **5x10=50M**

9.
10.
11.
12.
13.
14.
15.
16.

INTERNAL EXAMS - 25Marks

(20 marks for unit tests, **5** marks for assignments 5marks for Attendance **5** marks for seminar remaining 5 marks for Objective type quections.)

Guide lines for paper setter: (for Paper VIII -BOT-602) W.e.f. 2018-19

1.In Section A: Unit I, II, III, must carry Two question from each unit. Unit IV, V must carry one question.

2. In section-B: Set minimum two questions from Unit I, II & III and Set One Question from IV, V.

3. See the following table and Model paper.

4. Please provide the scheme of valuation for the paper.

5. Question paper should be both in English and Telugu media.

Unit	Section - A		Section - B		Weightage in
	Questions	Marks	Questions	Marks	Marks
Unit – I	2		2		
	10		20		30
Unit – II	2		2		
	10		20		30
Unit – III	1		2		
	05		20		25
Unit-IV	1		1		
	5		10		15
Unit-V	2		1		
	10		10		20
Max. Q & marks	8 (x 5) = 40		8 (x 10) = 80		(Total questions = 16) Marks 120
Max. Q and marks for Valuation	Questions	Marks	Questions	Marks	Max. marks
	5		5		
	(5 x 5) = 25		(5 x 10) = 50		75

INTERNAL EXAMS - 25Marks

(15 mark for unit tests, 5 marks for assignments and remaining 5 marks for seminar etc

PLANT DIVERSITY AND HUMAN WELFARE

SEMESTER- VI **BOT-602-A-1(CL)P**

ime: 3hrs Max. Marks: 50

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1) Study of plant diversity (flowering plants).
2) Study of exotic species- Identification and morphological characteristics.
3) Identification of forest trees through bark, wood, flowers, leaves and fruits.
4) Maceration, Study of wood (Tracheary elements, fibres).
5) Methods of preservation and canning of fruits.
6) Visit to the local ecosystem to study the plants.
7) Study of Solid and Liquid waste management systems in rural/urban areas.

SCHEME OF PRACTICAL EXAMINATION

I. Assign the plants **A, B and C** to their respective families, giving reasons, family name and classification-1marks, important diagrams- 2 marks…….**09 marks**

II. Give the protocol of **D …….……..…..04marks**

III. Comment on specimens **E, F and G ……...3x3 = 09 marks**

IV. Report on Field visit…… **4 marks**
To study sources of firewood (10 plants), timber-yielding trees (10trees) and bamboos.

V. Viva-Voce ……**04marks**

Total……..… 30 **Marks**

Internals

a. Record - ……..….05M
b. Attendance……05M
c. Internal practical exam……..10M

Total…… **20 Marks**

Total ----------50M

KEY
A-Cultivated Plant
B- Wild Plant
C –Exotic plant
D- Preservation and canning of fruits, solid and liquid waste management systems in rural/urban areas
E. Bark/wood/fruit yielding plant
F. Nuts/ Alcoholic beverage plant
G. wood /Fibre yielding plant

Paper – VIII-A-1: Practical's:

PLANT DIVERSITY AND HUMAN WELFARE

SEMESTER- VI **BOT-602-A-(CL) P**

SCHEME OF PRACTICAL EXAMINATION

Time: 3hrs Max. Marks: 50

I. Assign the plants **A, B and C** to their respective families, giving reasons, family name and classification-1marks, important diagrams- 2 marks……..……**09 marks**

II. Give the protocol of **D …….……..04marks**

III. Comment on specimens **E, F and G …….3x3= 09 marks**

IV. Report on Field visit…… **4 marks**
To study sources of firewood (10 plants), timber-yielding trees (10trees) and bamboos.

V. Viva-Voce ……**4marks**

Total ---- 30marks

Internals:

a. Record - ……..….05M
b. Attendance……05M
c. Internal practical exam……..10M

Total ---- 20marks

Total ----------50M

KEY
A-Cultivated Plant
B- Wild Plant
C –Exotic plant
D- Preservation and canning of fruits, solid and liquid waste management systems in rural/urban areas
E. Bark/wood/fruit yielding plant
F. Nuts/ Alcoholic beverage plant
G. wood /Fibre yielding plant

Suggested Readings:

1. Krishnamurthy, K.V. (2004). An Advanced Text Book of Biodiversity - Principles and Practices. Oxford and IBH Publications Co. Pvt. Ltd. New Delhi.

2. Singh, J. S., Singh, S.P. and Gupta, S. (2006). Ecology, Environment and Resource Conservation. Anamaya Publications, New Delhi.

3. Rogers, P.P., Jalal, K.F. and Boyd, J.A. (2008). An Introduction to Sustainable Development. Prentice Hall of India Private Limited, New Delhi.

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III. BZC (B. Sc)	BOTANY-VIII	BOT- 603 (CE)	2018-19

Paper – VIII-A-2 Credits: 3

ETHNOBOTANY AND MEDICINAL BOTANY

Total hours of teaching 60hrs @ 6hrs per week

Unit –I: Ethnobotany (12hrs)

1. Introduction, concept, scope and objectives
2. Major and minor ethnic groups or Tribals of India, and their lifestyles.
3. Plants used by the tribal populations:
   a) Food plants, b) intoxicants and beverages,
   c) Resins and oils and miscellaneous uses.

Unit -II: Role of ethnobotany in modern Medicine (12hrs)

1. Role of Ethnobotany in modern medicine with special example; *Rauvolfiasepentina*, *Artemisia annua, Withaniasomnifera.*
2. Significance of the following plants in ethno botanical practices (along with their habitat and morphology)
   a)Azadirachtaindica, b)*Vitexnegundo*,c)Ocimum sanctum,,d) phyllanthus niruri
3. Role of ethnic groups in the conservation of plant genetic resources.

Unit-III: Ethno botany as a tool to protect interests of ethnic groups (12hrs)

1. Sharing of wealth concept with few examples from India.
2. Biopiracy, Intellectual Property Rights and Traditional Knowledge.

Unit -IV: History, Scope and Importance of Medicinal Plants. Indigenous Medicinal Sciences (12hrs)

1. Definition and Scope - Ayurveda: History, origin, Panchamahabhutas, saptadhatu and tridosha concepts, Rasayana, plants used in ayurvedic treatments.

2 Homeopathy: Origin of Homeopathy medicinal systems, Basis of Homeopathy, plants used in Homeopathy medicine.

Unit -V: Conservation of endangered and endemic medicinal plants (12hrs)

1. Definition: endemic and endangered medicinal plants,
2. Red list criteria
3. *In situ* conservation: sacred groves, National Parks
4. *Ex situ* conservation: Botanical Gardens.

B.Sc – BOTANY

SEMESTER-VI: THEORY MODEL PAPER BOT-VIII-603-A- 2(CL)

Time: 3 Hours **Max. Marks:75**

SECTION-A

Answer any five of the following question. **5x5=25M**

1.
2.
3.
4.
5.
6.
7.
8.

SECTION-B

Answer any five of the following questions. **5x10=50M**

9.
10.
11.
12.
13.
14.
15.
16.

INTERNAL EXAMS - 25Marks

(20 marks for unit tests, **5** marks for assignments 5marks for Attendance **5** marks for seminar remaining 5 marks for Objective type quections.)

Guide lines for paper setter: (for Paper VIII-BOT-603(CE)) W.e.f. 2018-19

1. In Section A: Unit I, IV, must carry two questions from each unit. Unit II must carry Two Question.Unit III, V must carry one question.
2. In section-B: Set minimum Two questions from Unit I, II & IV and Set One Question ` from III , V.
3. See the following table and Model paper.
4. Please provide the scheme of valuation for the paper.
5. Question paper should be both in English and Telugu media.

Unit	Section - A		Section - B		Weightage in
	Questions	Marks	Questions	Marks	Marks
Unit – I	2		2		
	10		20		30
Unit – II	2		2		
	10		20		30
Unit – III	1		1		
	05		10		15
Unit-IV	2		2		
	10		20		30
Unit-V	1		1		
	5		10		15
Max. Q & marks	8 (x 5) = 40		8 (x 10) = 80		(Total questions = 16) Marks 120
Max. Q and marks for Valuation	Questions	Marks	Questions	Marks	Max. marks
	5		5		
	(5 x 5) = 25		(5 x 10) = 50		75

INTERNAL EXAMS - 25Marks (15 mark for unit tests, 5 marks for assignments and remaining 5 marks for seminar etc.).

III B. Sc – Practical Paper

ETHNOBOTANY AND MEDICINAL BOTANY

SEMESTER- VI **BOT-VIII-603-A- 2(CL)P**

Time: 3 Hours **Max. Marks- 50**

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1. Ethno botanical specimens as prescribed in theory syllabus
2. Detailed morphological and anatomical study of medicinally important part(s) of locally available plants (Minimum 8 plants) used in traditional medicine.
3. Field visits to identify and collect ethno medicinal plants used by local tribes/folklore.

Practical Question Paper

I. Identify the specimen A- Give reasons (morphological and anatomical) and draw Labeled sketches ……..…….……10marks

II. Identify and write about the medicinal uses of B-and C……. 3x3= 09 marks

III. Comment on D and E…….2 x 2= 04 marks

IV. Report on Field visit:……04 marks
List to be prepared mentioning special features of plants used by tribal Populations as Medicinal Plants & Spices. Write their botanical and common names, Parts used and diseases/disorders for which they are prescribed.

V. Viva-voce…… 03 marks

Total…… **30Marks**

Internals

a. Record - ……..….05M
b. Attendance……05M
c. Internal practical exam……..10M

Total…… **20 Marks**

Total ----------50M

KEY

A-Plants given in unit II (i)
B-Plants used in Ayurvedic prearations (Amla in Chyavanprash, Senna in Laxatives)
C - - Do -
D. Photographs of National parks, Biosphere reserves and Botanical gardens.
E. Photograph of famous personalities in Ayurveda/Siddha medicine.

Suggested Readings:

1) S.K. Jain, Manual of Ethnobotany, Scientific Publishers, Jodhpur, 1995.

2) Glimpses of Indian. Ethnobotny, Oxford and I B H, New Delhi – 1981.

3) S.K. Jain (ed.) 1989. Methods and approaches in ethnobotany. Society of ethnobotanists, Lucknow, India.

4) S.K. Jain, 1990. Contributions of Indian ethnobotny.Scientific publishers, Jodhpur.

5) Colton C.M. 1997. Ethnobotany – Principles and applications. John Wiley and sons Chichester

A.G & S.G. Siddhartha Degree College of Arts & Science
An Autonomous College in the Jurisdiction of Krishna University

III-BZC B.Sc	BOTANY-VIII	BOT-604- (CE)	2018-19

SEM-VI: **Pharmacognosy and Phytochemistry** Credits: 3
Total hours of teaching 60hrs @ 6hrs per week

Unit-I: Pharmacognosy **(12hrs)**

1. Definition, Importance
2. Classification of drugs - Chemical and Pharmacological
3. Drug evaluation methods

Unit –II: Organoleptic and microscopic studies: (12hrs)

1. Organoleptic and microscopic studies with reference to nature of active principles and common adulterants of
2. a) *Adhatoda vasica*(leaf) b) *Strychnosnuxvomica* (seed), c)R*auwolfia serpentina*(root) d)*Zinziberofficinalis* e)C*atharanthusroseus.*

Unit-III: Secondary Metabolites: **(12hrs)**

1. Definition of primary and secondary metabolites and their differences, Major types - terpenes, Phenolics, alkaloids, terpenoids, steroids.
2. A brief idea about extraction of alkaloids. Origin of secondary metabolites–detailed account of Mevalonate pathway,Shikimate pathway.

UNIT-IV: Phytochemistry: (12hrs)

`Biosynthesis and sources of drugs:

1. Structural type biosynthesis importance of simple Phenolic compounds, coumarins, Flavonoids.
2. Steroids, sterols: Biosynthesis, commercial importance.
3. Alkaloids: Different groups, biosynthesis, bioactivity.
4. Volatile oils, aromatherapy.

UNIT-V: Enzymes, proteins and amino acids as drugs: **(12hrs)**

1. Vaccines, toxins and toxoids, immune globulins, antiserums,
2. Vitamins, Antibiotics – chemical nature, mode of action.
3. Pharmacological action of plant drugs – tumor inhibitors, PAF antagonists, antioxidants, phytoestrogens and others.

B.Sc – BOTANY

SEMESTER-VI: THEORY MODEL PAPER BOT-604-A- 3(CL)

Time: 3 Hours **Max. Marks:75**

SECTION-A

Answer any five of the following question **5x5=25M**

1.
2.
3.
4.
5.
6.
7.
8.

SECTION-B

Answer any five of the following questions **5x10=50M**

9.
10.
11.
12.
13.
14.
15.
16.

INTERNAL EXAMS - 25Marks

(20 marks for unit tests, **5** marks for assignments 5marks for Attendance **5** marks for seminar remaining 5 marks for Objective type quections.)

Guide lines for paper setter: (for Paper VI-BOT-604) W.e.f. 2018-19.

1. In Section A: Unit III, IV, V must carry two questions from each unit. Unit I, II, must carry One question.
2. In section-B: Set minimum two questions from Unit I, II & III and Set One Question from IV, V.
3. See the following table and Model paper.
4. Please provide the scheme of valuation for the paper.
5. Question paper should be both in English and Telugu media.

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		5		20	25
Unit – III	2		2		
		10		20	30
Unit-IV	2		1		
		10		10	20
Unit-V	2		1		
		10		10	20
Max. Q & marks	8 (x 5) = 40		8 (x 10) = 80		(Total questions = 16) Marks 120
Max. Q and marks for Valuation	Questions	Marks	Questions	Marks	Max. marks
	5		5		
	(5 x 5) = 25		(5 x 10) = 50		75

INTERNAL EXAMS - 25Mark

(15 mark for unit tests, 5 marks for assignments and remaining 5 marks for seminar etc.)

Pharmacognosy and Phytochemistry

SEMESTER- VI BOT-VIII-604-A- 3 (CL)P

Time: 3 Hours Max. Marks- 50

1. Physical and chemical tests for evaluation of unorganized drugs- Asaphoetida. Honey, Castor oil. Acacia
2. Identification of bark drugs – cinchona, cinnamom
3. Identification of fruit drugs – Cardamom, Coriander
4. Identification of root and rhizome drugs- Ginger, Garlic, Turmeric
5. Identification of whole plant – Aloes,Vinca, Punarnava
6. Herbarium of medicinal plants (minimum of 20 platns)
7. Collection of locally available crude drugs from local venders (minimum of 20)

Practical Question Paper

I. Identify the given crude drugs **A& B** by morphological study and chemical tests……..…..**2X5 = 10marks**

II. Perform suitable chemical test and identify the given phytochemical **C…….05marks**

III. Comment on D and E ……..….**2x3= 06 marks**

IV. Herbarium and submission of drugs **-…….….5 marks**

IV. Viva-Voce ……...**04 marks**

Total…… **30Marks**

Internals

a. Record - ……..….05M

b. Attendance……05M

c. Internal practical exam……..10M

Total…… **20Marks**

Total ----------50M

KEY

A-Flower/fruit drugs

B-Rhizome/whole plant drugs

C- Tannins/ phenolics/steroids/ isoprenoids /Asaphoetida/ Honey/ Castor oil/ Acacia

D. Column Chromatography/ Gas Chromatogram/HPLC (photograph/ instrument used for chemical analysis of drugs.

BOOKS FOR REFERENCE:

1. Wallis, T. E. 1946. Text book of Pharmacognosy, J & A Churchill Ltd. 2. Roseline, A. 2011. Pharmacognosy. MJP Publishers, Chennai.

2. Gurdeep Chatwal, 1980. Organic chemistry of natural productis. Vol.I.Himalaya Publishing house.

3. Kalsi, P. S. and Jagtap, S., 2012. Pharmaceutical medicinal and natural Product chemistry N.K. Mehra . Narosa Publishing House Pvt. Ltd. New Delhi.

4. Agarwal, O. P. 2002. Organic chemistry–Chemistry of organic natural products. Vol. II. Goel publishing house , Meerut.