

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

NAAC recredited at 'A' level

DEPARTMENT OF BOTANY



BOS MEETING 16 - 04 -2019

ACADEMIC YEAR - (2019-20)

ODD SEM – I, III & V

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 16-04-2019 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 16/4/19 University  
(Smt. Dr. L. Suseela) Nominee Department of Biotechnology &  
Head (I/c) Botany,  
Krishna University, Machilipatnam.
- 3) A. Srinivas Rao 16/04/19 Academic  
(Sri. Dr. A. Srinivas Rao) Council Nominee Lecture in Botany,  
Govt. Degree College Mandapeta,  
East Godavari.
- 4) N. Manimala Academic  
(Smt. N. Manimala) Council Nominee Head, Department of Botany  
Govt. Degree College Chinthalapudi,  
West Godavari.
- 5) S. Krishna Suman Industrialist.  
(Sri. S. Krishna Suman) Natural farming.  
yakamuru  
Vuyyuru, Krishna d.t
- 6) N. Ramana Rao Member  
(Sri. N. Ramana Rao) Ad hoc Lecturer in Botany  
AG & SGS Degree College of Arts &  
Science (Autonomous), Vuyyuru-521165.
- 7) E. Ganesh Member  
(Sri. E. Ganesh) Ad hoc Lecturer in Botany  
AG & SGS Degree College of Arts &  
Science (Autonomous), Vuyyuru-521165.
- 8) K. Anusha student representative  
(Miss K. Anusha MSc) Lecturer in chaitanya college,  
Vuyyuru.

**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 2019-20.
2. To recommend the syllabi (Theory & Practical), Model question paper & Guide lines for Semesters III & IV of II B.Sc (BZC) in the academic year 2019-20.
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 2019-20.
4. To discuss to the syllabus of Elective & Clusters in VI semester to be for the academic year 2019-20.
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 continue a certificate course - Mushroom culture for II Year students in this academic year of 2019-20.
7. To recommend the teaching and evaluation methods to be followed under Autonomous statues.
8. Any other matter.

CH. Beulah Rajani

**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 2019-20.
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 2019-20.
3. It is resolved to implement the same syllabi & model papers under Choice Based Credit System (CBCS) setters of Botany of V & VI semesters of III B.Sc. (B.Z.C) approved by the Academic Council of 2019-20.
4. It is resolved to follow Elective-AC (Plant tissue culture and its Biotechnological applications) and Cluster –A (plant Diversity and human welfare, Ethno Botany and Medicinal Botany, Pharmacognosy and phyto chemistry.) In VI Semester from the Academic year 2019-20.
5. It is resolved to Continue the same Blue prints of III, IV, V & VI Semesters of B. Sc Botany for the Academic year 2019-20.
6. It is resolved to implement certificate course for II Year students.
7. It is resolved to continue the following teaching and evolution methods for the Academic year 2019-20.
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 2019-20 – 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 /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 For the III, IV, V & VI semesters it is resolved to continue the same as approved by Academic Council in 2019-20.

**II. Semester-End Examinations:**

- The maximum marks for I & II B.Sc (BZC) Semester-End examinations shall be 70 marks and duration of the examination shall be 3 Hours.
- The maximum marks for 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**

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BOTANY	BOT - 101C	w.e.f. 2019-20	B. Sc. (BZC)
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**SEMESTER - I**

**PAPER - I**

**Microbial Diversity, Algae and Fungi**

Total hours of teaching 60 hrs @ 4 hrs per week

**Credits: 3**

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**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 – Archaeobacteria - 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**

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**SECTION-A**

**Answer any Four of the following questions.**

**4x5=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**

**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 life history of macrandrous species in Oedogonium.
14. Describe the life history of Vaucheria.
15. Describe the life history of Penicillium.
16. Write about the life history of Macrocytic heterogenous rust.

**Guide lines for paper setter:** (for Paper I – BOT - 101C) w.e.f. 2019-20.

1. In **section A**: Unit II, III & IV must carry **ONE** question from each Unit, 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		
		15		10	25
Unit - II	1		2		
		5		20	25
Unit – III	1		1		
		5		10	15
Unit – IV	1		2		
		5		20	25
Unit – V	2		2		
		10		20	30
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
	4		5		
		(4 X 5) = 20		(5 X 10) = 50	70

#### **INTERNAL EXAMS – 30 Marks**

(**20** marks for unit tests, **5marks** for attendance, **5marks** for Seminars).



## **I B.Sc - SEMESTER - I: BOTANY PRACTICAL SYLLABUS**

### **Paper - 101C (P): Microbial Diversity, Algae and Fungi**

**Time: 3hrs.**

**Max. Marks: 50**

**Total hours of laboratory Exercises 30 hrs @ 2 per week**

**Credits - 2**

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1. Knowledge of Equipment used in Microbiology: Spirit lamp, Inoculation loop, Hot-air oven, Autoclave/Pressure cooker, laminar air flow chamber and Incubator...etc.
  2. Preparation of liquid and solid media for culturing of microbes (Demonstration).
  3. Study of viruses and bacteria using electron photo micrographs .
  4. Gram staining Bacteria.
  5. Study of Plant disease symptoms caused by Bacteria (Citrus canker, leaf blight of rice, Angular leaf spot of Cotton) and viruses (TMV, Bhendi vein clearing and Leaf curl of Papaya), Fungi (Late blight of potato, Red rot of Sugarcane and Paddy blast).
  6. Study of vegetative and reproductive structures of the following :
    - a) Algae: Oedogonium, Vaucheria , Ectocarpus, Nostoc and Scytonema.
    - b) Fungi: Albugo, Penicillium and Puccinia .
  7. Section cutting of diseased material infected by Fungi and identification of Pathogens as per theory syllabus.
  8. Lichens: Different types of thalli and anatomy
  9. Field Visit.
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**B.Sc - SEMESTER - I**  
**BOTANY PRACTICAL PAPER - I**  
**Paper-101C (P): Microbial Diversity, Algae and Fungi**  
**Time: 3hrs. Credits - 2 Max. Marks: 50**

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1. Identify giving reasons Three of the given **Algal mixture** "A". Leave your preparation for evaluation. Draw labeled diagrams. (Slide—  $\frac{1}{2}$  mark, Diagrams- $\frac{1}{2}$  mark, Identification--1mark) 2 x 2 = 4 Marks
2. Make suitable stained preparation of the **material "B"** to bring out the details of internal structure identify giving reasons. Draw labeled diagrams and leave your preparations for evaluation. (Slide-2 marks, diagrams-1 marks, Identification- 1marks) 04 Marks
3. **Conduct C** - Gram staining of Bacteria (Preparation 2m, procedure 3marks) 05 Marks
4. Write critical notes and Identify **D, E, F, G and H** (Identification--1mark, Notes 1marks) 5X2 = 10 Marks
5. **Viva – voce** (Any three simple questions from syllabus) 2 Marks

Total: **25 Marks**

**Internal Assessment**

a) Record	10Marks
b) Submission of Chart / Model	5 Marks
c) Attendance	5 Marks
d) Internal Practical Exam	5 Marks

Total : **25 Marks**

Total: 50 Marks

**Key:**

- A. Algal material
- B. Fungi material
- C. Bacterial culture
- D. One of the instruments of Micro biology laboratory.
- E. Whole specimen or a permanent slide of Algae.
- F. Whole specimen or a permanent slide of Fungi.
- G. Whole specimen or a permanent slide of Plant disease studied.
- H. Whole specimen or a permanent slide of Lichens.

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BOTANY	BOT-301C	w.e.f. 2019-20	B. Sc. (BZC)
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**II B. Sc - BOTANY**

**SEMESTER - III**

**PAPER – III**

**Plant Taxonomy and Plant Physiology**

**Hours: 60 @ 4 hrs per week**

**Credits: 3**

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**UNIT – I: Introduction to Plant Taxonomy**

**(12 hrs)**

1. Fundamental components of taxonomy (identification, nomenclature, classification types and phylogeny)
2. Salient features of Bentham & Hooker classification.
3. Role of chemotaxonomy, cytotaxonomy and Embryology in relation to Taxonomy.
4. APG IV System of Classification – 2016.

**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, Fertilizers and Enzymes**

**(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- 301C	w.e.f. 2019-20	B. Sc. (BZC)
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**II B. Sc – BOTANY**

**Model Question Paper**

**SEMESTER- III**

**PAPER-III: Plant Taxonomy and Plant Physiology**

**Time: 3 Hours**

**Max. Marks: 70**

**SECTION-A**

Answer any **four** of the following questions.

**4x5 = 20Marks**

(Draw diagrams wherever necessary)

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**

(Draw diagrams wherever necessary)

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 2019-20

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
	4 (4 X 5M) = 20 M		5 (5 X 10M)= 50 M		70M

**INTERNAL EXAMS - 30Marks**

(20 marks for unit tests, 5 marks for seminar 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**

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**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. 2019-20

### Plant Taxonomy and Plant Physiology

Time: 3 Hrs

Max. Marks: 50

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- |   |     |
|---|-----|
| 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 – 2M+Assignment-3M)  
Total -----50M

### Scheme of valuation

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. | = 11 M |
| 2. Material 'B' – (Family name - 1, Identification with reasons - 2)  | = 03M  |
| 3. Material 'C' –Physiology –minor experiment (Salient features 3, Diagram 2M)  | = 05M  |
| 4. 'D' & 'E'(2 Herbarium sheets from students collection)   | = 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 – 2M+Assignment-3M)

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BOTANY	BOT-501C	2019-20	B.Sc. (BZC)
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**PAPER – V Cell Biology, Genetics and Plant Breeding**

**SEMESTER-V (2019-20)**

Total Hours of teaching 60 hrs @ 6 hrs for Week

Credits: 03

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**UNIT-I Cell Biology**

**(12 hrs)**

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**

**(12 hrs)**

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**

**(12 hrs)**

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**

**(12 hrs)**

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

**UNIT-V Plant Breeding**

**(12 hrs)**

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**

**Time: 3 Hours**

**Max. Marks: 75**

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**SECTION-A**

**Answer any five of the following question**

**5x5=25M.**

(Draw diagrams wherever necessary)

1. Nucleosome
2. Griffith experiment.
3. t RNA
4. Back cross and test cross.
5. Transcription.
6. Three point test cross.
7. Hybridization.
8. Crossing over.

**SECTION-B**

**Answer all of the following questions.**

**5x10= 50M.**

(Draw diagrams wherever necessary)

9. Describe the Ultra structure and functions of cell membrane.
10. What is cell theory? Write about eukaryotic cell components.
11. Write about structure and replication of DNA.
12. DNA as a genetic material proof with suitable experiments.
13. Explain the Mendel's law of inheritance.
14. Define linkage. Describe the different types of Linkage.
15. Write an essay on mechanism and Regulation of gene Expression in Prokaryotes.
16. Discuss about methods of Crop improvement.

**Guide lines for paper setter:** (for Paper V-BOT-501) W.e.f. 2019-20

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**

(15 marks for unit tests, 5marks for Attendance 5 marks for seminars)

**III B.SC-BOTANY Practical paper**  
**Cell Biology, Genetics and Plant Breeding**

**SEMESTER-V**

**BOT-501-P**

**Time :3hr**

Total hours of teaching 30hrs @ 2 hrs per week

**Max.marks:50**

- 
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 MODEL PAPER**

**PAPER –V: CELL BIOLOGY GENETICS AND PLANT BREEDING**

1. Perform the Experiment A Squash technique.....12M
2. Give the experimental protocol of the experiments. B.....04M
3. Solving numerical problems on Mendelian inheritance....C, D.....2x7½=15M
4. Record.....05M
- Viva.....04M
- 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.....2½M

2X7½=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, New York.
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 Molecular Biology, K.M. Verghese and Company .

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

<b>BOTANY</b>	<b>BOT-502</b>	2019-20	<b>B.Sc. (BZC)</b>
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**SEMESTER-V (2019-20)**

**PAPER – VI**

**PLANT ECOLOGY & PHYTOGEOGRAPHY**

Credits-03

Total Hours of teaching 60 hrs @ 6 hrs for Week

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**UNIT-I-ELEMENTS OF ECOLOGY**

**(12 hrs)**

1. Ecology: Definition, branches and significance of ecology.
2. Climatic factors: Light, Temperature.
3. Edaphic factor: Origin, formation, composition and soil profile.
4. Biotic factor, Ecological adaptations of Plants.

**Unit– II. Ecosystem Ecology**

**(12 hrs)**

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.**

**(12 hrs)**

1. Population-definition, 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**

**(12 hrs)**

1. Principles of Phytogeography, Distribution (Wides, Endemic, Discontinuous species).
2. Phytogeographic regions of India.
3. Endemism – types and Causes.

**Unit-V Plant Biodiversity and its Importance**

**(12 hrs)**

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**

**PLANT ECOLOGY & PHYTOGEOGRAPHY**

**Time: 3 Hours**

**Max. Marks: 75**

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**SECTION-A**

**Answer any five of the following question.**

**5x5=25M.**

(Draw diagrams wherever necessary)

1. Soil profile.
2. Biotic factor.
3. Food web.
4. Energy Flow in Ecosystem.
5. Natality.
6. Biological Spectrum
7. Endemism.
8. Red-Data book.

**SECTION-B**

**Answer any Five of the following questions.**

**5x10=50M.**

(Draw diagrams wherever necessary)

9. Discusses the importance of Temperature Factor on Plant Growth.
10. Briefly Discuss the Ecological Adaptations of Xerophytes.
11. What are Ecological Pyramids? Describe the Pyramids of numbers, BioMass and Energy.
12. What are biogeochemical cycles? Give an account of Nitrogen cycle?
13. What is Plant Succession? Describe Hydrosere?
14. What are the Characters of Plant Communities.
15. What are Principles of Plant Phytogeography.
16. What is Biodiversity? Explain the Levels of Biodiversity.

**Guide lines for paper setter:** (for Paper V-BOT-501) W.e.f. 2019-20

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

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1. Study of instruments used to measure microclimatic variables; soil thermometer, maximum and minimum thermometer, anemometer, psychrometer, rain gauge, 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 quadrat size for the study of herbaceous vegetation in the college campus by species area curve method.
6. Study of Phytoplankton and macrophytes 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