

# SRI Y.N.COLLEGE (AUTONOMOUS)

Affiliated to Adikavi Nannayya University

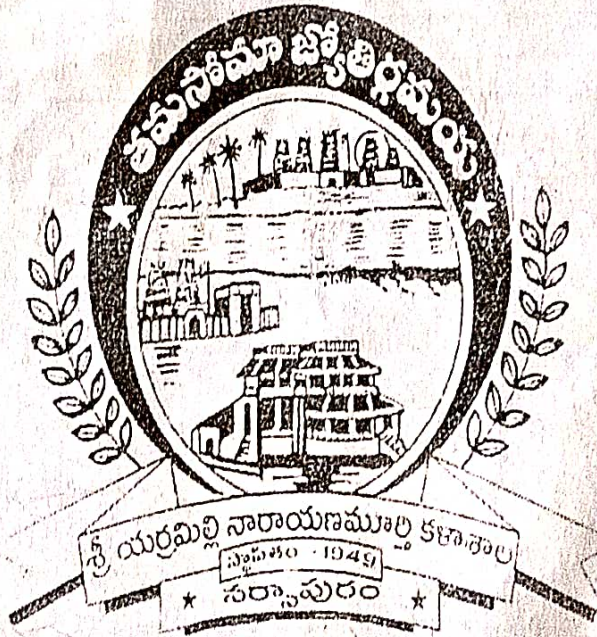
Thrice accredited by NAAC at 'A' Grade

Recognized by UGC as "College with Potential for Excellence"

NARSAPUR - 534 275

(AS PER CBCS AND SEMESTER SYSTEM)  
AP STATE COUNCIL OF HIGHER EDUCATION  
CBCS - PATTERN

2018-2019



**BOTANY SYLLABUS**

Andhra Pradesh State Council of Higher Education  
Structure of B.Sc Botany under CBCS

Year	Semester	Paper	Title	Hours	Marks	Credits
I	I	I	Microbial Diversity , Algae and Fungi	4	100	03
			Practical –I	2	50	02
	II	II	Diversity Of Archaeogoniatas & Anatomy	4	100	03
			Practical –II	2	50	02
II	III	III	Plant taxonomy & Embryology	4	100	03
			Practical –III	2	50	02
	IV	IV	Plant physiology & Metabolism	4	100	03
			Practical –IV	2	50	02
III	V	V	Cell Biology, Genetics & Plant breeding	3	100	03
			Practical –V	2	50	02
		VI	Plant Ecology & Phytogeography	3	100	03
			Practical –VI	2	50	02
	*Any one paper from (A), (B) and (C) can be selected	VII (A)*	Elective	3	100	03
			Lab	2	50	02
		VII (B)*	Elective			
			Lab			
		VII (C)*	Elective			
			Lab			
	VI **Any one cluster (Set of Three Papers) from VIII-A or VIII-B can be selected	** VIII-A	Cluster Elective-A	3	100	03
			VIII-A-1	3	100	03
			VIII-A-2	3	100	03
			VIII-A-3	2	50	02
Or			2	50	02	
** VIII-B		Cluster Elective-B				
VIII-B-1						
VIII-B-2						
VIII-B-3						



# SRI Y.N. COLLEGE (AUTONOMOUS) NARASAPUR

Affiliated to Adikavi Nannayya University

Thrice accredited by NAAC at 'A' Grade

Recognized by UGC as "College with Potential for Excellence"

I B.Sc ;I Semester (2018-2021)

## Botany Paper-I

(Microbial Diversity, Algae and Fungi)

### UNIT- I: MICROBIAL WORLD (Origin and Evolution of Life, Microbial diversity)

1. Discovery of microorganisms, origin of life, spontaneous, biogenesis, Pasteur experiments, germ theory of disease.
2. Classification of microorganisms –R.H. Whittaker's five kingdom, Carl concep Woese's-Domain system.
3. Brief account of special groups of bacteria- Archaeobacteria, Mycoplasma, Chlamydia, Actinomycetes, Rickettsias and Cyanobacteria.

### UNIT- II: VIRUSES

1. Viruses- Discovery, general account, structure& replication of –T4 Phage (Lytic, Lysogenic) and TMV, Viroids, Prions.
2. Plant diseasescaused by viruses–Symptoms, transmission and control measures (Brief account only).
3. Study of Tobacco Mosaic, Bhendi Vein clearing and Papaya leaf curl diseases.

### UNIT III: BACTERIA

1. Bacteria: Discovery, General characteristics, cell structure and nutrition.
2. Reproduction- Asexual and bacterial recombination (Conjugation, Transformation, Transduction).
3. Economic importance of Bacteria.

### UNIT –IV Algae

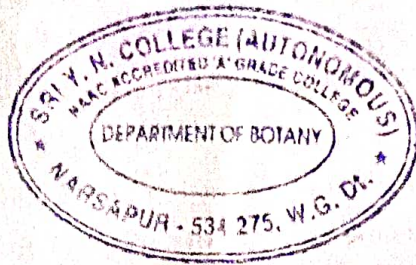
1. General account - thallus organization and reproduction in Algae.
2. Fritsch classification of Algae (up to classes only) and economic importance.
3. Structure, reproduction and life history of *Oedogonium*, *Ectocarpus* and *Polysiphonia*.

### UNIT V: FUNGI

1. General characteristics and outline classification (Ainsworth).
2. Structure, reproduction and life history of *Rhizopus* (Zygomycota), *Penicillium* (Ascomycota), and *Puccinia* (Basidiomycota).
3. Lichens-Structure and reproduction; ecological and economic importance.

**Suggested activity:** Seminar, Quiz, debate, collection of diseased plant parts – studying symptoms and identification of pathogen, collection and study of fresh and marine Algae available in local area.

**APPROVED**



*T. R. ...*  
CHAIRMAN 23/6/18

BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *T. R. ...*
- 2 *Dr. S. ...*
- 3 *N. ...*
- 4
- 5 *K. M. ...*
- 6 *G. ...*
- 7 *S. ...*

## Books for Reference

1. Oladele Ogunseitan (2008) *Microbial Diversity: Form and Function in Prokaryotes* Wiley- Blackwell.
2. Pelczar, M.J. (2001) *Microbiology*, 5th edition, Tata Mc Graw-Hill Co, New Delhi.
3. Prescott, L. Harley, J. and Klein, D. (2005) *Microbiology*, 6th edition, Tata Mc Graw- Hill Co. New Delhi.
4. Fritsch F.E. (1935 *The Structure & Reproduction of Algae* 1945): Cambridge University Press Cambridge, U.K. Vol. I, Vol. II.
5. Smith, G.M (1955) :*Cryptogamic Botany*(Vol. I Algae, Fungi, & Lichens) McGraw-Hill Book Co., New York .
6. Ian Morris (1967): *An Introduction to the Algae*, Hutchinson, London.
7. Alexopoulos, C.J., Mims, C.W. & Blackwell, M. (1996): *Introductory Mycology* John Wiley & Sons., Inc., N.Y., Chicester, Berisbane, Toronto, Singapore.
8. Webster, J (1999) : *Introduction to Fungi*(2nd edition) Cambridge University Press.

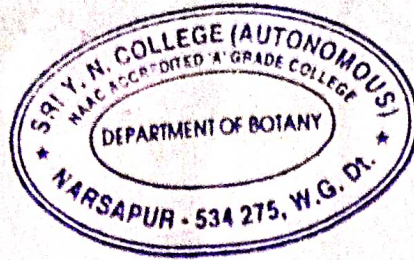
**\*\*Student Activities like Seminars, Assignments, Fieldwork, Study Projects, Models etc. are**

**Part of Curriculum for all units in all papers.**

## Blue Print (Guidelines to the Paper Setter)

Unit	Essay Questions	Short Note Questions
Unit –I	2	1
Unit – II	2	2
Unit –III	2	1
Unit –IV	2	2
Unit –V	2	2
<b>Total</b>	<b>10</b>	<b>8</b>

**APPROVED**



*T R...*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *T R...*
- 2 *isli...*
- 3 *N. ...*
- 4
- 5 *K.M...*
- 6 *G. ...*
- 7 *Dw ...*



**SRI Y.N. COLLEGE (AUTONOMOUS) NARASAPUR**

Affiliated to Adikavi Nannayya University

Thrice accredited by NAAC at 'A' Grade

Recognized by UGC as "College with Potential for Excellence"

I B.Sc ; I Semester (2018-2021)

**Botany Paper-I**

( Microbial Diversity, Algae and Fungi)

Date:

Max.Marks:75

Time:

Duration: 3 Hrs

**PART-I**

**NOTE:** Draw neat labelled diagrams wherever necessary for questions in Part-I & II  
విభాగము I మరియు II లోని ప్రశ్నలకు అవసరమైనచోట భాగములు గుర్తించిన పటములు వేయుము

Answer any FIVE of the following. Each one carries 5 Marks. 5 x 5=25M

ఈ క్రింది వాటిలో ఏవైనా ఐదింటికి నమాధానము వ్రాయుము. ప్రతి దానికి ఐదు మార్కులు.

- |                                     |                                 |
|-------------------------------------|---------------------------------|
| 1. Mycoplasma                       | మైకోప్లాస్మా                    |
| 2. TMV structure                    | TMV నిర్మాణము                   |
| 3. Bhendi Vein clearing             | బెండలో ఈనెల నిర్వృతము           |
| 4. Conjugation in Bacteria          | బ్యాక్టీరియాలోని సంయుగము        |
| 5. Nanandrus species                | నానాండ్రస్ జాతులు               |
| 6. Tetrasporophyte                  | చతుఃసిద్ధబీజదము                 |
| 7. Asexual reproduction in Rhizopus | రైజోపస్ అలైంగిక ప్రత్యుత్పత్తి. |
| 8. Puccinia Uredosorus              | పక్షీనియ యురిడోసోరస్            |

**PART-II**

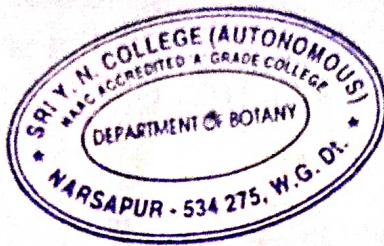
Answer any FIVE questions, choosing atleast TWO from each section. 5 x 10= 50M

ఏవేని ఐదు ప్రశ్నలకు నమాధానము వ్రాయుము, ప్రతి విభాగము నుండి కనీసం రెండు వ్రాయుము.

**SECTION-A**

9. Explain the different theories regarding evolution of life.  
జీవ పరిణామాన్ని వివరించే వివిధ సిద్ధాంతాలను వివరింపుము.
10. Explain the five kingdom classification of R.H. Whittaker.  
R.H.విట్టేకర్ ఐదు రాజ్యాల వర్గీకరణను వివరింపుము.
11. Describe the replication in bacteriophages.  
బ్యాక్టీరియోఫేజ్ లలో ప్రతికృతిని గూర్చి వర్ణింపుము.
12. Write an essay on transmission of viral diseases in plants.  
మొక్కలలో వ్యాధికారక వైరస్ ల వ్యాప్తిని గూర్చి ఒక వ్యాసము వ్రాయుము.
13. Describe the Bacterial cell structure in detail.  
బ్యాక్టీరియా కణ నిర్మాణము గూర్చి విపులంగా వర్ణింపుము.

**APPROVED**



*T. R. ...*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y. N. COLLEGE (AUTONOMOUS)  
(MAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *T. R. ... 23/6/18*
- 2 *B. ...*
- 3 *N. ...*
- 4
- 5 *H. M. ...*
- 6 *G. ...*
- 7 *S. ...*



**SECTION-B**

14. Write an essay on economic importance of bacteria.

బ్యాక్టీరియా యొక్క ఆర్థిక ప్రాముఖ్యత గూర్చి ఒక వ్యాసము వ్రాయుము.

15. Describe the thallus organisation in Algae.

తైవలాలలోని థాలస్ సంవిధానాన్ని వర్ణించండి.

16. Explain the life history of Ectocarpus

ఎక్టోకార్పస్ జీవిత చరిత్రను వివరింపుము.

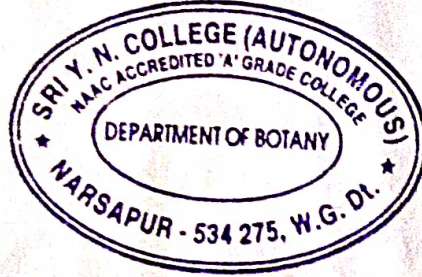
17. Describe the structure and reproduction of Penicillium.

పెన్సిలియం నిర్మాణము మరియు ప్రత్యుత్పత్తిని వర్ణింపుము.

18. Describe the external characters and economic importance of Lichens.

లైకెన్ బాహ్య లక్షణములు, మరియు ఆర్థిక ప్రాముఖ్యతను వర్ణింపుము.

**APPROVED**



*T. R. ...*  
CHAIRMAN 23/6/18  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

1 *T. R. ...* 23/6/18

2 *B. ...*

3 *H. ...*

4

5 *K. M. ...*

6 *G. ...*

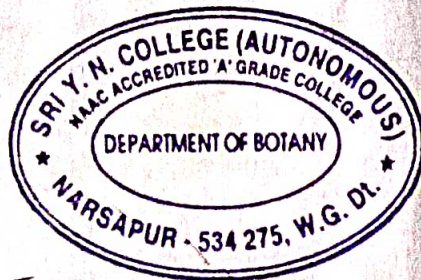
7 *S. ...*

**I B.Sc-SEMESTER-I; BOTANY PRACTICAL SYLLABUS**  
**Paper-I: Microbial Diversity, Algae and Fungi**

---

1. Knowledge of Equipment used in Microbiology: Spirit lamp, Inoculation loop, Hot-air oven, Autoclave/Pressure cooker, laminar air flow chamber and Incubator.
  2. Preparation of liquid and solid media for culturing of microbes (Demonstration).
  3. Study of viruses and bacteria using electron photo micrographs (TMV, Bacteriophage, HIV, Cocci, Bacillus, Spirillum bacteria).
  4. Gram staining technique.
  5. Study of Plant disease symptoms caused by Bacteria (Citrus canker, leaf blight of rice, Angular leaf spot of Cotton) and viruses (TMV, Bhandi 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) **Cyanobacteria:** *Nostoc and Scytonema*.
    - b) **Algae:** *Oedogonium, Ectocarpus, Polysiphonia*,
    - c) **Fungi:** *Rhizopus, Penicillium and Puccinia*.
  7. Study of plant material infected by Fungi (Rot of tomatoes, blue and green moulds of Citrus fruits and wheat rust (Section cutting of diseased parts of Wheat and Barberry - identification of different spores).
  8. Lichens: Morphology and anatomy of different thalli.
  9. Field Visit.
- 

**APPROVED**



*TR* 23/6/18  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

1 *TR* 23/6/18  
2 *Bh*  
3 *N*  
4  
5 *K.M*  
6 *G. P.*  
7 *Pw*

**B.Sc - SEMESTER -I**  
**BOTANY PRACTICAL PAPER -I**  
**Paper-I : Microbial Diversity, Algae and Fungi**

Time: 3hrs.

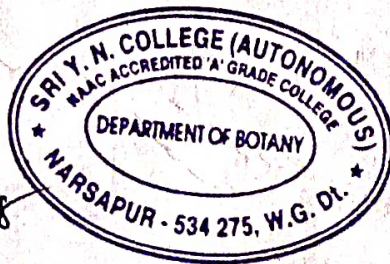
Max. Marks: 50

1. Identify giving reasons two of the given Algal mixture". Leave A your preparation for evaluation. Draw labeled diagrams. (Slide--1 mark, Diagrams--1 mark, Identification--1 mark)  
3x 2 = 6 Marks  
10 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-4 marks, diagrams-3 marks, Identification-3marks)  
9 Marks
  3. Perform Gram staining of the given Bacterial culture  
(5X3)= 15 Marks
  4. Write critical notes and Identify D, E, F, G and H  
10 Marks
  5. Record(submission is compulsory)
- 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.

**APPROVED**



*T. R. M. 23/10/18*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y. N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *T. R. M. 23/10/18*
- 2 *Bh. Raju*
- 3 *N. S. M.*
- 4
- 5 *K. M. V.*
- 6 *G. P. S.*
- 7 *D. W. S.*

# SRI Y.N. COLLEGE (AUTONOMOUS) NARASAPUR

Affiliated to Adikavi Nannayya University

Thrice accredited by NAAC at 'A' Grade

Recognized by UGC as "College with Potential for Excellence"

I B.Sc ;II Semester (2018-2021)

## Botany Paper-II

(Diversity of Archaeogoniates & Plant Anatomy)



### UNIT –I: BRYOPHYTES

1. Bryophytes: General characters, Classification (up to classes)
2. Structure, reproduction and Life history of *Marchantia*, and *Funaria*.
3. Evolution of Sporophyte in Bryophytes.

### UNIT - II: PTERIDOPHYTES

1. Pteridophytes: General characters, classification (up to Classes)
2. Structure, reproduction and life history of *Lycopodium*, and *Marsilea*.
3. Heterospory and seed habit.
4. Evolution of stele in Pteridophytes.

### UNIT –III: GYMNOSPERMS

1. Gymnosperms: General characters, classification ( up to classes)
2. Morphology, anatomy, reproduction and life history of *Pinus* and *Gnetum*
3. Economic importance with reference to wood, essential oils and drugs

### UNIT –I V: TISSUES AND TISSUE SYSTEMS

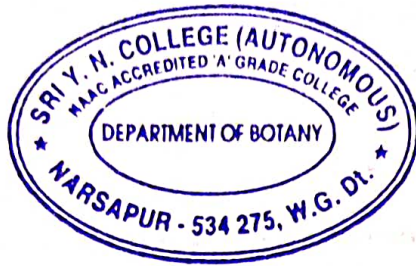
1. Meristems - Root and Shoot apical meristems and their histological organization.
2. Tissues –Meristematic and permanent tissues (simple, complex, secretory)
3. Tissue systems–Epidermal, ground and vascular.

### UNIT –V. SECONDARY GROWTH

1. Anomalous secondary growth in *Bignonia*, *Boerhaavia* and *Dracaena*.
2. Study of local timbers of economic importance-Teak, Rosewood, Red sanders and Arjun (Tella maddi).

**Suggested activity:** Collection of *Marsilea* sporocarp, *Pinus* needles, male and female cones, study of *Pinus* pollen grains, collection of locally available economically useful timbers.

**APPROVED**



*T. R. ...*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(MAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *T. R. ... 22/6/18*
- 2 *Dr. ...*
- 3 *M. ...*
- 4
- 5 *K. ...*
- 6 *G. ...*
- 7 *S. ...*

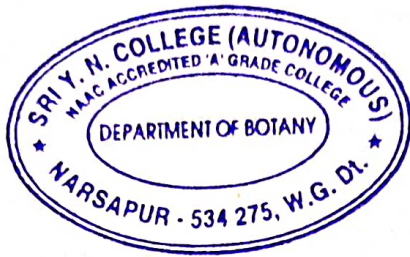
## Books for Reference:

1. Cavers, Frank ( ): The inter-relationships of the Bryophytes  
New Phytologist, Indian Reprint.
2. Smith, G.M. (1955): Cryptogamic Botany Vol. II. (2nd Edition)  
(Bryophytes & Pteridophytes) Tata McGraw Hill Publishing Co., New Delhi.
3. Parihar, N.S. ( ): An Introduction to embryophyta –Vol.II. Bryophyta  
Central Book Depot, Allahabad.
4. Watson, E.V. (1968): British Mosses & Liverworts Cambridge University Press, U.K
5. Eames, A.J. (1936) : Morphology of Vascular Plants (Lower Groups)  
McGraw Hill, N.Y.
6. Parihar, N.S. (19 ) : An Introduction to Embryophyta Vol.II Pteridophyta  
Central Book Depot., Allahabad.
7. Smith, G.M. (1955) : Cryptogamic Botany Vol.II (2nd Edn.,) (Bryophytes &  
Pteridophytes) Tata McGraw Hill Publishing Co., New Delhi.
8. Sporne, K.R. (1970) : The Morphology of Pteridophytes (The Structure of  
Ferns and Allied Plants) Hutchinson University Library, London
9. Bierhorst, D.W. (1971) : Morphology of Vascular Plants, The MacMillan Co., N.Y.  
& Collier- MacMillan Ltd., London.
10. Coulter, J.M.& C.J. Chamberlain (1964) : Morphology of Gymnosperms  
Central Book Depot, Allahabad.

## Blue Print (Guidelines to the Paper Setter)

Unit	Essay Questions	Short Note Questions
Unit –I	2	2
Unit – II	2	2
Unit –III	2	1
Unit –IV	2	2
Unit –V	2	1
<b>Total</b>	<b>10</b>	<b>8</b>

**APPROVED**



*[Signature]*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *[Signature]* 22/6/18
- 2 *[Signature]*
- 3 *[Signature]*
- 4
- 5 *[Signature]*
- 6 *[Signature]*
- 7 *[Signature]*



**SRI Y.N. COLLEGE (AUTONOMOUS) NARASAPUR**

Affiliated to Adikavi Nannayya University

Thrice accredited by NAAC at 'A' Grade

Recognized by UGC as "College with Potential for Excellence"

I B.Sc ;II Semester (2018-2021)

**Botany Paper-II**

**(Diversity of Archaeogoniates & Plant Anatomy)**

Date: \_\_\_\_\_ Max.Marks:75  
Time: \_\_\_\_\_ Duration: 3 Hrs

**PART-I**

**NOTE: Draw neat labelled diagrams wherever necessary for questions in Part-I & II**  
విభాగము I మరియు II లోని ప్రశ్నలకు అవసరమైనచోట భాగములు గుర్తించిన పటములు వేయుము

**Answer any FIVE of the following. Each one carries 5 Marks. 5 x 5=25M**

ఈ క్రింది వాటిలో ఏవైనా ఐదింటికి నమాధానము వ్రాయుము. ప్రతి దానికి ఐదు మార్కులు.

1. Classification of Bryophytes బ్రయోఫైట్ల వర్గీకరణ
2. Funaria Archegonial Branch L.S పున్యనేరియా స్త్రీ బీజాశయ శాఖ నిలువుకోత
3. Lycopodium cone L.S లైకోపోడియం శంకు నిలువుకోత
4. Marsilea Sporocarp మార్సిలియా స్పోరోకార్ప్
5. Angiosperm Characters in Gnetum నీటమ్లో ఆవృత బీజ లక్షణాలు
6. Phloem పోషక కణజాలం
7. Types of Stomata పత్రరంధ్ర రకాలు
8. Rose wood రోజ్వుడ్

**PART-II**

**Answer any FIVE questions, choosing atleast TWO from each section. 5 x 10= 50M**

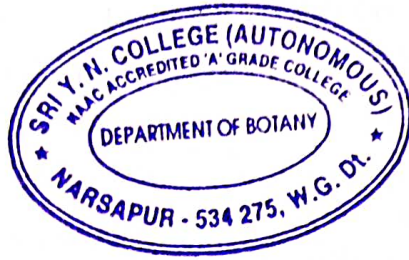
ఏవేని ఐదు ప్రశ్నలకు నమాధానము వ్రాయుము, ప్రతీ విభాగము నుండి కనీసం రెండు వ్రాయుము.

**SECTION-A**

9. Describe the external and internal structure of the thallus in Marchantia.  
మార్కాంపియాలోని థాలస్యొక్క బాహ్య మరియు అంతర నిర్మాణములను గురించి వివరింపుము.
10. Explain the theories regarding the evolution of sporophytes in Bryophytes.  
బ్రయోఫైట్లలోని సిద్ధబీజద పరిణామాన్ని వివరించే సిద్ధాంతాలను వివరించండి.
11. Describe the internal structure of the Marsilea Rhizome.  
మార్సిలియా కొమ్ము అంతర్నిర్మాణాన్ని వర్ణింపుము
12. Explain the stelar evolution in Pteridophyta.  
టెరిడోఫైటాలోని ప్రసరణ స్తంభ పరిణామమును తెల్పుండి.
13. Describe the Internal structure of Pinus needle and add a note on its xerophytic characters.  
పైనస్ నీడిల్ యొక్క అంతర్నిర్మాణాన్ని వర్ణింపుము. దానిలోని ఎడారి లక్షణములను తెలుపుము.



**APPROVED**



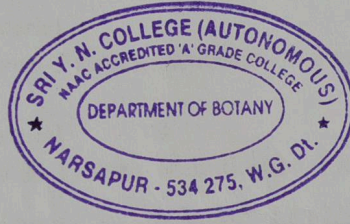
*[Signature]*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *[Signature]* 23/6/14
- 2 *[Signature]*
- 3 *[Signature]*
- 4
- 5 K. My
- 6 G. Red.
- 7 *[Signature]*

**SECTION-B**

14. Give an illustrated account of male and female strobili in Gnetum.  
నీట్రులో పురుషశంకువు మరియు స్త్రీ శంకువుల నిర్మాణాన్ని పటముల సహాయంతో వివరించండి.
15. Describe various theories regarding the organisation of shoot apex.  
కాండాగ్ర నిర్మాణమును వివరించే వివిధ సిద్ధాంతములను వర్ణించుము.
16. Give an account of Simple Tissues. ✓  
సరళ కణజాలాలను గురించి వ్రాయండి.
17. Describe the process of anomalous secondary growth in Boerhavia stem. ✓  
బోయర్హావియ కాండములో అసంగత ద్వితీయ వృద్ధిని వివరింపుము.
18. Describe the characters of Tectona grandis (Teak) wood with suitable diagrams and mention its uses. ✓  
పటసహాయంతో టెక్టోనా గ్రాండిస్ (టేకు) కలప లక్షణాలు వర్ణింపుము, ఆ కలప యొక్క ఉపయోగాలను తెల్పుండి.

**APPROVED**



CHAIRMAN 23/8/18  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 TRM 23/8/18  
2 B. K. K.  
3 N. K. K.  
4  
5 K. M. W.  
6 G. R. K.  
7 D. W. K.

**I B.Sc SEMESTER -II**  
**BOTANY PRACTICAL SYLLABUS**  
**Paper-II: Diversity of Archaeogoniaties & Plant Anatomy**

---

1. Morphology (vegetative and reproductive structures) , anatomy of the following :  
*Marchantia, Funaria, Lycopodium* and *Pinus*.
2. Anatomy:
  - a) Demonstration of double staining technique.
  - b) Tissue organization in root and shoot apices using permanent slides
  - c) Preparation of double staining slides
  - d) Anomalous secondary structure of *Bignonia, Boerhavia* and *Dracaena*.
  - e) Anatomical study of wood in T.S., T.L.S. and R.L.S.
3. Field visits to local timber depots.

**I B.Sc., SEMESTER –II: BOTANY PRACTICAL MODEL PAPER**  
**IB :Diversity of Archaeogoniaties & plant Anatomy**

---

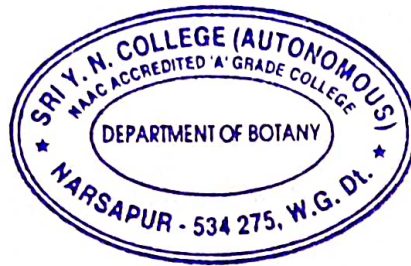
- |  |               |
|--|---------------|
| 1. Section cutting of material -A<br>(Slide 3 marks, diagrams-3 marks, Identification-3 marks) | 9 Marks       |
| 2. Section cutting of material -B<br>(Slide 3 marks, diagrams-3 marks, Identification-3 marks) | 9 Marks       |
| 3. Section cutting of material -C<br>(Slide 4 marks, diagrams-3 marks, Identification-3 marks) | 10 Marks      |
| 4. Identification of spotters - D, E, and F  | 3x4 =12 marks |
| 5. Record (submission compulsory)  | 10 marks      |

-----  
Total : 50 Marks  
-----

**Key:**

- A. Bryophyta/ Pteridophyta material
  - B. Gymnosperm material.
  - C. Anatomy material.
  - D. Whole specimen or permanent slide of Bryophyta/ Pteridophyta
  - E. Whole specimen or permanent slide of Gymnosperm.
  - F. Whole specimen or permanent slide of wood.
-

**APPROVED**



*T.R. ...*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *T.R. ...*
- 2 *Dr. ...*
- 3 *N. ...*
- 4
- 5 *K.M.V.*
- 6 *G. ...*
- 7 *S. ...*

# SRI Y.N. COLLEGE (AUTONOMOUS) NARASAPUR

Affiliated to Adikavi Nannayya University

Thrice accredited by NAAC at 'A' Grade

Recognized by UGC as "College with Potential for Excellence"

II B.Sc ;III Semester (2017-2020)

## Botany Paper-III

(Plant Taxonomy and Embryology)



### UNIT –I: INTRODUCTION TO PLANT TAXONOMY& CLASSIFICATION

1. Fundamental components of taxonomy (identification, nomenclature, classification)
2. Taxonomic resources: Herbarium- functions& important herbaria, Botanical gardens, Flora, Keys- single access and multi-access.
3. Botanical Nomenclature- Principles and rules of ICBN (ranks and names; principle of priority, binomial system; type method, author citation, valid-publication).
4. Types of classification- Artificial, Natural and Phylogenetic.
5. Bentham & Hooker's system of classification- merits and demerits.

### UNIT –II: SYSTEMATIC TAXONOMY-I

1. Engler & Prantle's system of classification- merits and demerits
2. Phylogeny –origin and evolution of Angiosperms
3. Systematic study and economic importance of the following families: Annonaceae, Brassicaceae, Rutaceae, Curcubitaceae, and Apiaceae.

### UNIT –III: SYSTEMATIC TAXONOMY-II

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

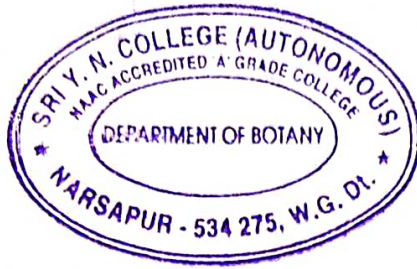
### UNIT –IV: EMBRYOLOGY-I

1. Anther structure, microsporogenesis and development of male gametophyte.
2. Ovule structure and types; Megasporogenesis, development of Monosporic, Bisporic and Tetrasporic types (*Peperomia*, *Drusa*, *Adoxa*) of embryo sacs.   
 polygamum      Album      pepelomra

### UNIT –V: EMBRYOLOGY-II

1. Pollination and Fertilization (out lines) Endosperm development and types.
2. Development of Dicot and Monocot embryos, Polyembryony.

**APPROVED**



*T. R. ...*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *T. R. ...* 23/7/18
- 2 *P. R. ...*
- 3 *M. L. ...*
- 4
- 5 *K. M. ...*
- 6 *G. P. ...*
- 7 *D. W. ...*

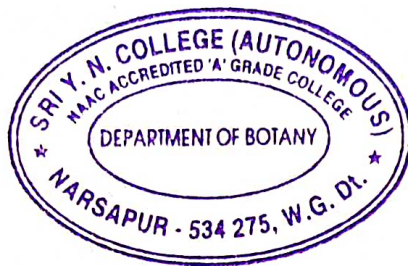
### Books for Reference:

1. Porter, C.L. ( ): Taxonomy of flowering Plants, Eurasia Publishing House, New Delhi.
2. Lawrence, G.H.M. (1953): Taxonomy of Vascular Plants, Oxford & IBH Publishers, New Delhi, Calcutta.
3. Jefferey, C.(1968) : An Introduction to Plant Taxonomy J.A. Churchill, London.
4. Mathur, R.C.(1970) : Systematic Botany (Angiosperms) Agra Book Stores- Lucknow, Ajmer, Allahabad, Delhi.
5. Maheswari,P(1963) :Recent Advances in the Embryology of Angiosperms(Ed., ) International Society of Plant Morphologists- University of Delhi.
6. Swamy. B.G.L. & Krishnamoorthy. K.V.(1980):From flower to fruit Tata McGraw Hill Publishing Co., Ltd., New Delhi.
6. Maheswari, P.(1985):An Introduction to the Embryology of Angiosperms Tata McGraw Hill Publishing Co.,Ltd., New Delhi.
8. Bhojwani, S.S. & Bhatnagar, S.P. (2000) : The Embryology of Angiosperms (4th Edition) Vikas Publishing House(P)Ltd., UBS P Delhi.

### Blue Print (Guidelines to the Paper Setter)

Unit	Essay Questions	Short Note Questions
Unit -I	2	1
Unit - II	2	1
Unit -III	2	2
Unit -IV	2	2
Unit -V	2	2
<b>Total</b>	<b>10</b>	<b>8</b>

**APPROVED**



*T.R. 23/6/18*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *T.R. 23/6/18*
- 2 *Bh. Srip*
- 3 *N. L. L.*
- 4
- 5 *K. M. W.*
- 6 *G. D. S.*
- 7 *S. W. T.*





# SRI Y.N. COLLEGE (AUTONOMOUS) NARASAPUR

Affiliated to Adikavi Nannayya University  
Thrice accredited by NAAC at 'A' Grade  
Recognized by UGC as "College with Potential for Excellence"  
II B.Sc ;III Semester (2017-2020)

## Botany Paper-III (Plant Taxonomy and Embryology)

Date:

Max.Marks:75

Time:

Duration: 3 Hrs

### PART-I

NOTE: Draw neat labelled diagrams wherever necessary for questions in Part-I & II  
విభాగము I మరియు II లోని ప్రశ్నలకు అవసరమైనచోట భాగములు గుర్తించిన పటములు వేయుము

Answer any FIVE of the following. Each one carries 5 Marks. 5 x 5=25M

ఈ క్రింది వాటిలో ఏవైనా ఐదింటికి నమాధానము వ్రాయుము. ప్రతి దానికి ఐదు మార్కులు.

1. Binomial Nomenclature ద్వి నామీకరణ
2. Essentials organs of Annonaceae అనోనేసిలో ఆవశ్యక అంగాలు
3. Safety mechanism in Asteraceae ఆస్టరేసిలో భద్రత యాంత్రికం
4. Economic importance of Poaceae పోయేసి ఆర్థిక ప్రాముఖ్యత
5. Anther wall ✓ పరాగకోశం గోడ
6. Types of Ovules ✓ అండాళ రకాలు
7. Cellular endosperm ✓ కణమయ అంకురచ్ఛదం
8. Dicot embryo ✓ ద్విదళబీజ పిండం

### PART-II

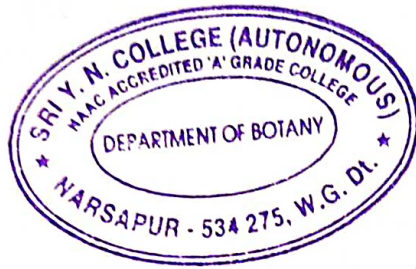
Answer any FIVE questions, choosing atleast TWO from each section. 5 x 10= 50M

ఏవేని ఐదు ప్రశ్నలకు నమాధానము వ్రాయుము, ప్రతి విభాగము నుండి కనీసం రెండు వ్రాయుము.

### SECTION-A

9. Write an essay on International Code of Botanical Nomenclature (ICBN).  
అంతర్జాతీయ వృక్షనామీకరణ నియమావళి ( ICBN ) గూర్చి వ్యాసము వ్రాయుము
10. Give an account of Bentham and Hooker's System of Classification Discuss its merits and demerits.  
బెంథామ్ మరియు హూకర్ల వర్గీకరణ గూర్చి తెలిపి దాని ప్రతిభలను, లోపాలను చర్చింపుము
11. Give an account of Engler and Prantl system of classification. Discuss its merits and demerits.  
ఎంగ్లర్ మరియు ప్రాంటర్ల వర్గీకరణ గూర్చి వ్రాసి దాని ప్రతిభలను మరియు లోపాలను తెలుపుము
12. Describe the salient features of Rutaceae family and mention the economic importance of any three plants.  
రూటేసి కుటుంబ ముఖ్య లక్షణములు వర్ణింపుము. ఈ కుటుంబానికి చెందిన మూడు మొక్కల ఆర్థిక ప్రాముఖ్యతను తెలుపుము.
13. Describe the salient features of Asclepiadaceae family.  
అస్క్లిపియడేసి కుటుంబ ముఖ్య లక్షణములు వర్ణింపుము.

APPROVED



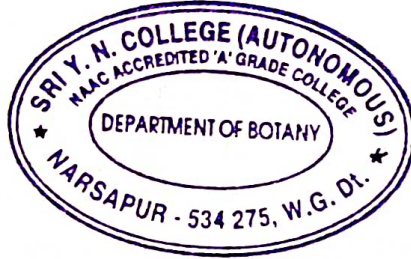
T. R. K. 23/6/18  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y. N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 T. R. K. 23/6/18
- 2 B. S. S.
- 3 N. L. K.
- 4
- 5 K. M. V.
- 6 G. R. S.
- 7 S. W. K.

**SECTION-B**

14. Enumerate the floral characters of Euphorbiaceae family. Mention the botanical names of any three plants of economic importance  
యూఫోర్బియేసి కుటుంబ పుష్పలక్షణాలు తెలిపి, ఆర్థిక ప్రాముఖ్యత కలిగిన ఏవైనా మూడు మొక్కల శాస్త్రీయ నామములు తెలుపుము.
15. Describe the Microsporogenesis. ✓  
సూక్ష్మ సిద్ధబీజ జననము గురించి వివరింపుము.
16. Describe the development of different types of Embryo sacs you have studied. ✓  
నీవు చదువుకున్న వివిధ రకముల పిండకోశముల వృద్ధిని విశదీకరింపుము.
17. Describe the process of fertilization in Angiosperms. ✓  
ఆవృతబీజాలలో జరిగే ఫలదీకరణ విధానమును వివరింపుము
18. What is meant by Polyembryony? Explain?  
బహుపిండత అనగా అర్థమేమిటి? వివరించండి.

**APPROVED**



*T. R. M. 23/6/18*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y. N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *T. R. M. 23/6/18*  
2 *B. S. S.*  
3 *K. S. S.*  
4  
5 *K. M. S.*  
6 *G. R. S.*  
7 *D. W. S.*

**II B.Sc BOTANY - SEMESTER-III**  
**Paper-III: PRACTICAL**  
**Plant Taxonomy and Embryology**

**Suggested Laboratory Exercises:**

1. Systematic study of locally available plants belonging to the families prescribed in theory syllabus.
2. Demonstration of herbarium techniques.
3. Structure of pollen grains using whole mounts (*Catharanthus, Hibiscus, Acacia, Grass*).
4. Demonstration of Pollen viability test using *in-vitro* germination (*Catharanthus*).
5. Study of ovule types and developmental stages of embryo sac using permanent slides /Photographs.
6. Structure of endosperm (nuclear and cellular); Developmental stages of dicot and monocot Embryos using permanent slides / Photographs
7. Isolation and mounting of embryo (using *Symopsis / Senna / Crotalaria*)
8. Field visits .
9. Study of local flora and submission of Field Note Book.

**II B.Sc., BOTANY- SEMESTER -III**  
**PRACTICAL MODEL PAPER- III Plant Taxonomy and Embryology**

1. Describe the given Plant specimens A in technical terms. Draw neat labeled diagrams of twig with inflorescence, L.S. of Flower, T.s. of Ovary and floral Diagram. Give floral formula. Identify the family.

1 x 15 = 15 Marks

(Description- vegetative - 4 marks, floral –5 marks; diagrams-5 marks, Identification-1 marks)

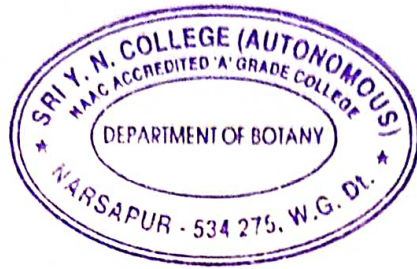
2. Derive the plant specimens B & C to their respective families- 2x4 = 08 marks

3. Identification of spotters - D, E ,and F (Embryology ) 3x4 =12 marks

4. Herbarium, Record & Viva (submission compulsory) 5 + 10= 15 marks

-----  
Total : 50 Marks  
-----

**APPROVED**



*T. R. ...*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLL)  
NARSAPUR - 534 275

- 1 *T. R. ...* 23/6/18
- 2 *Bh. ...*
- 3 *N. ...*
- 4
- 5 *K. M. ...*
- 6 *G. ...*
7. *J. ...*



# SRI Y.N. COLLEGE (AUTONOMOUS) NARASAPUR

Affiliated to Adikavi Nannayya University

Thrice accredited by NAAC at 'A' Grade

Recognized by UGC as "College with Potential for Excellence"

II B.Sc ;IV Semester (2017-2020)

## Botany Paper-IV

### ( Plant Physiology and Metabolism)

#### UNIT -I: PLANT -WATER RELATIONS

1. Physical properties of water, Importance of water to plant life.
2. Diffusion, imbibition and osmosis; concept & components of Water potential.
3. Absorption and transport of water and ascent of sap.
4. Transpiration -Definition, types of transpiration, structure and opening and closing mechanism of stomata.

#### UNIT -II: MINERAL NUTRITION & ENZYMES

1. Mineral Nutrition: Essential elements (macro and micronutrients) and their role in plant metabolism, deficiency symptoms.
2. Mineral ion uptake (active and passive transport).
3. Nitrogen metabolism- biological nitrogen fixation in *Rhizobium*, outlines of protein synthesis (transcription and translation).
4. Enzymes: General characteristics, mechanism of enzyme action and factors regulating enzyme action.

#### UNIT -III: PHOTOSYNTHESIS

1. Photosynthesis: Photosynthetic pigments, photosynthetic light reactions, photo-phosphorylation, carbon assimilation pathways: C<sub>3</sub>, C<sub>4</sub>, and CAM (brief account)
2. Photorespiration and its significance.
3. Translocation of organic solutes: mechanism of phloem transport, source-sink relationships.

#### UNIT -IV: PLANT METABOLISM

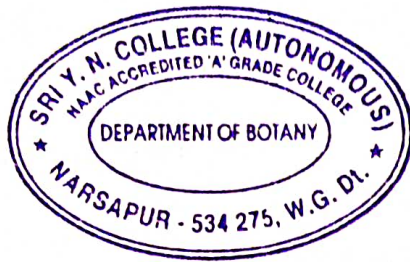
1. Respiration: Glycolysis, anaerobic respiration, TCA cycle, electron transport system. Mechanism of oxidative phosphorylation.
2. Lipid Metabolism: Types of lipids, Beta-oxidation.

#### UNIT -V: GROWTH AND DEVELOPMENT

1. Growth and development: definition, phases and kinetics of growth.
2. Physiological effects of phytohormones - Auxins, Gibberellins, Cytokinins, ABA, Ethylene and Brassinosteroids.
3. Physiology of flowering -photoperiodism, role of phytochrome in flowering; Vernalization.
4. Physiology of Senescence and Ageing.

**Suggested activity:** Seminars, Quiz, Debate, Question and Answer sessions, observing animations of protein biosynthesis in you tube.

APPROVED



T. R. ... 23/6/22  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 T. R. ... 22/6/18
- 2 B. ...
- 3 N. L. ...
- 4
- 5 K. M. ...
- 6 G. Red.
7. D. W. ...

### Books for Reference:

1. Steward, F.C (1964): Plants at Work (A summary of Plant Physiology) Addison-Wesley Publishing Co., Inc. Reading, Massachusetts, Palo alto, London.
2. Devlin, R.M. (1969) : Plant Physiology, Holt, Rinehart & Winston & Affiliated East West Press (P) Ltd., New Delhi .
3. Noggle, R.& Fritz (1989):Introductory Plant Physiology Prentice Hall of India.
4. Lawlor.D.W. (1989): Photosynthesis, metabolism, Control & Physiology ELBS/Longmans-London.
5. Mayer, Anderson & Bonning(1965): Introduction to Plant Physiology D.Van Nostrand . Publishing Co., N.Y.
6. Mukherjee, S. A.K. Ghosh(1998) Plant Physiology ,Tata McGraw Hill. Publishers(P) Ltd., New Delhi.
7. Salisbury, F.B & C.W. Ross (1999): Plant Physiology CBS Publishers and Printers, New Delhi.
7. Plummer, D.(1989) Biochemistry–the Chemistry of life ,McGraw Hill Book Co., London, N.Y. New Delhi, Paris, Singapore, Tokyo.
9. Day, P.M.& Harborne, J.B. (Eds.,) (2000): Plant Biochemistry. . Harcourt Asia (P) Ltd., India & Academic Press, Singapore.

### Blue Print (Guidelines to the Paper Setter)

Unit	Essay Questions	Short Note Questions
Unit –I	2	1
Unit – II	2	2
Unit –III	2	2
Unit –IV	2	1
Unit –V	2	2
<b>Total</b>	<b>10</b>	<b>8</b>



**APPROVED**



*Thm 23/6/18*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y. N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED A GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *Thm 23/6/18*
- 2 *Bh 88/18*
- 3 *N. L. h*
- 4
- 5 *K. MW*
- 6 *G. Red*
- 7 *Dw*



# SRI Y.N. COLLEGE (AUTONOMOUS) NARASAPUR

Affiliated to Adikavi Nannayya University

Thrice accredited by NAAC at 'A' Grade

Recognized by UGC as "College with Potential for Excellence"

II B.Sc ;IV Semester (2017-2020)

## Botany Paper-IV

( Plant Physiology and Metabolism)

Date:

Max.Marks:75

Time:

Duration: 3 Hrs

### PART-I

**NOTE:** Draw neat labelled diagrams wherever necessary for questions in Part-I & II  
విభాగము I మరియు II లోని ప్రశ్నలకు అవసరమైనచోట భాగములు గుర్తించిన పటములు వేయుము

Answer any FIVE of the following. Each one carries 5 Marks.

5 x 5=25M

ఈ క్రింది వాటిలో ఏవైనా ఐదంటికి నమాధానము వ్రాయుము. ప్రతి దానికి ఐదు మార్కులు.

1. Osmosis

ద్రవాభిసరణ

2. Transcription

అనులేఖనం

3. Lock and Key theory

తాళం కప్ప తాళం చెవి సిద్ధాంతం

4. Photosynthetic pigments

కిరణజన్యసంయోగక్రియ వర్ణద్రవ్యాలు

5. Source- sink relationship

సోర్స్ సింక్ సంబంధం

6. Anaerobic respiration

అవాయు శ్వాసక్రియ

7. ABA

అబ్ససిక్ ఆమ్లం

8. Vernalization

వెర్నలైజేషన్

### PART-II

Answer any FIVE questions, choosing atleast TWO from each section.

5 x 10= 50M

ఏవేని ఐదు ప్రశ్నలకు నమాధానము వ్రాయుము, ప్రతి విభాగము నుండి కనీసం రెండు వ్రాయుము.

### SECTION-A

9. Explain the theories of ascent of sap.

ద్రవోద్గమము ఎట్లా జరుగుతుందో వివరించే సిద్ధాంతాలను గురించి వ్రాయండి.

10. What is Transpiration? Describe the mechanism of closing and opening of stomata.

భాష్పోత్పేకం అనగానేమి? పత్రరంధ్ర చలనాలను వివరించే యాంత్రిక విధానాలను వివరించండి.

11. What are Macronutrients? Explain their deficiency symptoms in plants.

స్థూల పోషకాలు అనగానేమి? మొక్కలలో స్థూల పోషకాల లోప లక్షణాలను వివరింపుము

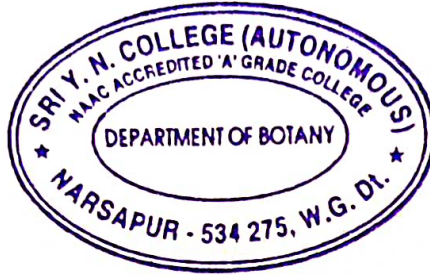
12. Explain the mechanism of Biological N<sub>2</sub> fixation

సజీవ నత్రజని స్థాపన యాంత్రికమును వివరింపుము

13. Explain the non Cyclic photophosphorylation.

అచక్రియ పోటో పాస్ఫోరిలేషన్ వివరింపుము

**APPROVED**



*T. R. S. R. S. R.*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y. N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *T. R. S. R. S. R.* 23/10/18
- 2 *Bh. S. S. S. S.*
- 3 *N. S. S. S.*
- 4
- 5 *K. M. S.*
- 6 *G. P. S.*
7. *S. S. S.*

*S. S. S.*

*S. S. S.*

**SECTION-B**

14. Describe Calvin's Cycle.

కాల్విన్ వలయమును వర్ణించుము.

15. Give an account of reactions in Glycolysis

గ్లైకోలసిస్లోని చర్యలను వివరించుము

16. Explain the reactions in Beta-oxidation.

బీటా ఆక్సికరణంలోని చర్యలను వివరించుము.

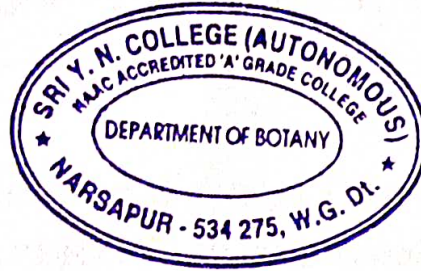
17. What are phytohormones? Explain the physiological effects of Auxins in plants?

ఫైటో హార్మోనులు అనగానేమి? మొక్కల శరీర ధర్మ క్రియలపై ఆక్సిన్ ప్రభావమును వివరించుము.

18. What is Photoperiodism? Describe various aspects of Photoperiodism.

కాంతి కాలావధి అనగా నేమి? దీనికి సంబంధించిన వివిధ అంశాలను వివరించండి.

**APPROVED**



*T. R. ...*  
CHAIRMAN 23/6/18  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

1 *T. R. ...* 23/6/18

2 *...*

3 *N. L. ...*

4

5 *K. M. ...*

6 *G. ...*

7. *...*

**II B. Sc BOTANY SEMESTRE- IV, Paper-IV: PRACTICAL  
SYLLABUS PAPER-IV: Plant Physiology and Metabolism**

**Suggested Laboratory Exercises:**

1. Osmosis –by potato osmoscope experiment
2. Determination of osmotic potential of plant cell sap by plasmolytic method using leaves of *Rhoeo / Tradescantia*.
3. Structure of stomata (dicot & monocot)
4. Determination of rate of transpiration using cobalt chloride method.
5. Demonstration of transpiration by Ganongs
6. Demonstration of ascent of sap/Transpiration pull.
6. Effect of Temperature on membrane permeability by colorimetric method.
7. Study of mineral deficiency symptoms using plant material/photographs.
8. Separation of chloroplast pigments using paper chromatography technique.
9. Rate of photosynthesis under varying Co<sub>2</sub> concentrations.
10. Effect of light intensity on oxygen evolution in photosynthesis using Wilmott'. bubbler

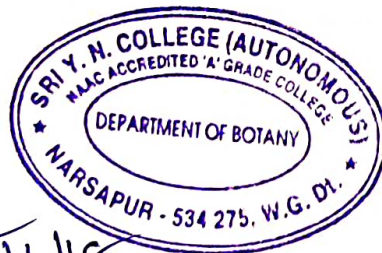
**II B. Sc –SEMESTER- IV, BOTANY PRACTICAL MODEL PAPER  
PAPER- IV - Plant Physiology and Metabolism**

1. Perform the Experiments A & B. Give the aim, principle, procedure and observation. Tabulate the results if any. Draw labeled diagram. 2 x 15= 30 marks
2. Give the protocol of the experiments C & D 2 x 5 =- 10 marks
3. Record & Viva

10 marks

-----  
50 marks

**APPROVED**



1. *Thy* 23/6/18
2. *Bl. ggy*
3. *M. L.*
- 4.
5. *K. M.*
6. *G. M.*
7. *Du* →

*Chairman* 23/6/18  
**CHAIRMAN**  
**BOARD OF STUDIES**  
**DEPARTMENT OF BOTANY**  
**SRI Y.N. COLLEGE (AUTONOMOUS)**  
**(NAAC ACCREDITED 'A' GRADE COLLEGE)**  
**NARSAPUR - 534 275**

**SRI Y.N. COLLEGE (AUTONOMOUS) NARASAPUR**

Affiliated to Adikavi Nannayya University

Thrice accredited by NAAC at 'A' Grade

Recognized by UGC as "College with Potential for Excellence"

**III B. Sc - SEMESTER- V(2016-2019)**

**BOTANY PAPER – V**

**Cell Biology, Genetics and Plant Breeding**

Total hours of teaching 60 hrs @ 3 hrs per week

---

**UNIT – I Cell Biology:**

**(12hrs)**

1. Cell, the unit of life- Cell theory, Prokaryotic and eukaryotic cells; Eukaryotic cell components.
2. Ultra structure and functions of cell wall and cell membranes.
3. Chromosomes: morphology, organization of DNA in a chromosome (nucleosome model), Euchromatin and heterochromatin.

**UNIT – II Genetic Material:**

**(12hrs)**

1. DNA structure (Watson & Crick model) and replication of DNA (semi-conservative)
2. Types of RNA (mRNA, tRNA, rRNA), their structure and function.

**UNIT – III Mendelian Inheritance:**

**(12 hrs)**

1. Mendel's laws of Inheritance (Mono- and Di- hybrid crosses); backcross and test cross.
2. Chromosomal mapping – 2-point & 3-point test cross.
3. Linkage: concept, complete and incomplete linkage, coupling and repulsion
4. Crossing Over: concept & significance.

**UNIT – IV 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 (outlines only).

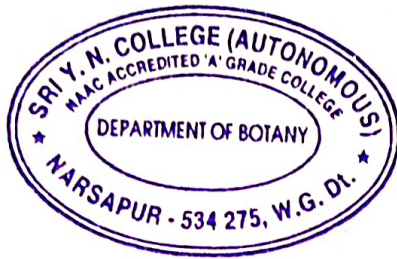
**UNIT – V Breeding, Crop Improvement and Biotechnology:-**

**(12 hrs)**

1. Role of mutations in crop improvement.
2. Role of somaclonal variations in crop improvement.
3. Molecular breeding – use of DNA markers in plant breeding and crop improvement (RAPD, RFLP).

**Suggested activity:** Seminar, Debate, Quiz, observation of live cells and nucleus in Onion peels, observation of Meiotic nuclei in Maize pollen. Solving Genetics problems.

**APPROVED**



*T. R. ...*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *T. R. ... 23/6/18*
- 2 *Dr. ...*
- 3 *M. ...*
- 4
- 5 *K. M. ...*
- 6 *G. ...*
7. *D. ...*

### Books for Reference:

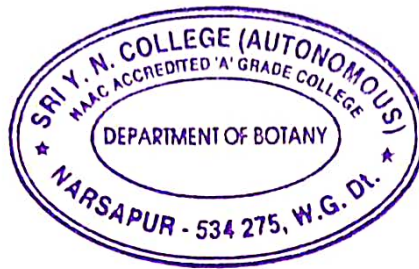
1. Old, R.W. and Primrose S.B. 1994, Principles of Gene Manipulation Blackwell Science, London
2. Grierson, D. and Convey S.N. 1989, Plant Molecular Biology, Blackie Publishers, New York.
3. Lea, P.J. and Leegood R.C. 1999, Plant Biochemistry and Molecular Biology, John Wiley and Sons, London.
4. Power C.B., 1984, Cell Biology, Himalaya Publishing Co. Mumbai
4. De. Robertis and De Robertis, 1998, Cell and Moleceular Biology, K.M. Verghese and
5. Sinnott, E.W., L.C. Dunn & J. Dobshansky (1958) : Principles of Genetics (5th Edition) McGraw Hill Publishing Co., N.Y. Toronto, London.
6. Winchester, A.M. (1958) : Genetics(3rd Edition) Oxford & IBH Publishing House, Calcutta, Bombay, New Delhi.
7. Singleton, R.(1963) : Elementary Genetics, D. Van Nostrand Co., Ltd., Inc., N.Y. & Affiliated East West Press (P) Ltd., New Delhi.
8. Strickberger, M.W. (1976): Genetics(2nd Edition) MacMillan Publishing Co., Inc., N.Y., London
9. Watson, J.D. (1977): Molecular Biology of the Gene, W.A. Benjamin, Inc., Menlo Park-California, Reading-Massachusetts, London, Amsterdam, Don Mills, Ontario, Sydney.
10. Gardner,E.J & Snusted, D.P.(1984): Principles of Genetics (7thedition) John Wiley & Sons, N.Y. Chichester, Brisbane, Toronto, Singapore.
11. Lewin, B. (1985) Genes VII Wiley Eastern Ltd., New Delhi, Bombay, Calcutta, Madras, Hydrabad.
12. Allard R.W(1999): The Principles of Plant Breeding, John & Wiley and Sons.
13. Poelman J.M: Breeding Field Crops, Springer.
14. George Acquaaah(2012):Principles of Plant Genetics & Breeding: Wiley-Blackwell.

### Blue Print (Guidelines to the Paper Setter)

Unit	Essay Questions	Short Note Questions
Unit –I	2	2
Unit – II	2	1
Unit –III	2	2
Unit –IV	2	1
Unit –V	2	2
<b>Total</b>	<b>10</b>	<b>8</b>



**APPROVED**



*Th...*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *T...*
- 2 *B...*
- 3 *N...*
- 4
- 5 *K. M...*
- 6 *G. N...*
7. *J...*

SRI Y.N. COLLEGE (AUTONOMOUS) NARASAPUR

Affiliated to Adikavi Nannayya University

Thrice accredited by NAAC at 'A' Grade

Recognized by UGC as "College with Potential for Excellence"

III B.Sc ;V Semester (2016-2019)

**Botany Paper-V**

( Cell Biology, Genetics and Plant Breeding)



Date:

Max.Marks:75

Time:

Duration: 3 Hrs

**PART-I**

**NOTE: Draw neat labelled diagrams wherever necessary for questions in Part-I & II**

విభాగము I మరియు II లోని ప్రశ్నలకు అవసరమైనచోట భాగములు గుర్తించిన పటములు వేయుము

**Answer any FIVE of the following. Each one carries 5 Marks.**

5 x 5=25M

ఈ క్రింది వాటిలో ఏవైనా ఐదింటికి నమాధానము వ్రాయుము. ప్రతి దానికి ఐదు మార్కులు.

1. Chloroplast structure

హరిత రేణువు నిర్మాణము

2. Differences between Euchromatin and Heterochromatin

యూక్రోమాటిన్ మరియు హెటెరోక్రోమాటిన్ మధ్య భేదాలు

3. t RNA structure

t RNA నిర్మాణం

4. Test Cross

పరీక్షా సంకరణము

5. Significance of Crossing over

వినిమయం యొక్క ప్రాముఖ్యత

6. Emasculation

విపుంసీకరణ

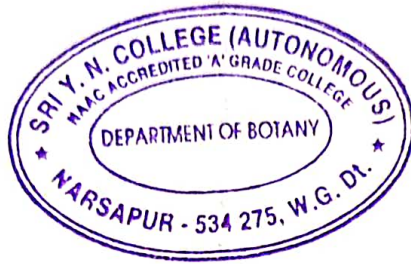
7. Role of Somaclonal variations in crop improvement

సస్యోభివృద్ధిలో శారీరక వైవిధ్యాల పాత్రను గూర్చి వ్రాయండి.

8. RFLP

ఆర్. ఎఫ్. ఎల్. పి

**APPROVED**



*T. Prasad*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *T. Prasad* 23/6/18
- 2 *Bh. Reddy*
- 3 *N. S. Reddy*
- 4
- 5 *K. Murthy*
- 6 *G. Reddy*
7. *S. Reddy*

## PART-II

Answer any FIVE questions, choosing atleast TWO from each section. 5 x 10= 50M

ఏవేని ఐదు ప్రశ్నలకు నమాధానము వ్రాయుము, ప్రతీ విభాగము నుండి కనీసం రెండు వ్రాయుము.

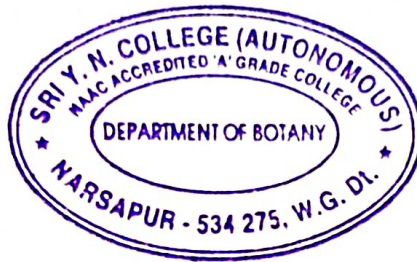
### SECTION-A

9. Describe the detailed Structure and functions of cell membrane  
కణత్వచం విపుల నిర్మాణం మరియు విధులను వర్ణింపుము
10. What is Nucleosome? Give an account of Solenoid model of Chromosome  
న్యూక్లియోజోం అనగానేమి? క్రోమోసోము యొక్క సోలినాయిడ్ నమునాను వర్ణించండి.
11. Explain the semiconservative DNA replication in Eukaryotes  
నిజకేంద్రక జీవులలో DNA అర్థ సంరక్షక ప్రతికృతిని వివరింపుము.
12. Write an essay on types of RNA structure and their functions.  
వివిధ రకాలైన RNA నిర్మాణం మరియు విధులను గూర్చి వ్యాసము వ్రాయండి
13. Describe the Mendel's Laws of Inheritance  
మెండల్ అనువంశిక సూత్రాలను వివరించండి.

### SECTION-B

14. What is Linkage? Describe the various types in Linkages  
సహలగ్నత అంటే ఏమిటి? సహలగ్నతలోని వివిధ రకాలను వివరింపుము.
15. Write an essay on Plant breeding.  
వృక్ష ప్రజననము గూర్చి వ్యాసము వ్రాయండి.
16. What is Selection? Describe various types of Selection  
వరణము అనగానేమి? వివిధ రకముల వరణములను వర్ణింపుము
17. Explain the role of Mutations in Crop Improvement  
సస్యాభివృద్ధిలో ఉత్పరి వర్తనాల పాత్రను గూర్చి వివరించండి
18. Write an essay on Molecular breeding.  
అణుస్థాయి ప్రజననము గూర్చి వ్యాసం వ్రాయండి.

APPROVED



*T. R. M. 23/6/18*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y. N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *T. R. M. 23/6/18*
- 2 *R. S. S. S.*
- 3 *N. S. S.*
- 4
- 5 *K. M. S.*
- 6 *G. S. S.*
7. *S. S. S.*

### III B. Sc - BOTANY SYLLABUS SEMESTER- V

#### Practical Paper-V: CELL BIOLOGY, GENETICS AND PLANT BREEDING

Total hours of teaching 30hrs @ 2hrs per week

---

#### Suggested Laboratory Exercises:

1. Study of the structure of cell organelles through photomicrographs.
2. Study of structure of plant cell through temporary mounts.
3. Study of various stages of mitosis using cytological preparation of Onion root tips.
4. Study of effect of organic solvent on permeability of cell membrane.
5. Numerical problems solving Mendel' 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 .Perform squash on onion root tip, prepare the slide, identify at least one division stage. Write the procedure and draw the diagram of reported stage.

1 x 15 = 15marks

2. Describe the procedure of Hybridization technique B

1 x 10 = 10 marks

3. Solving numerical problems on Mendelian inheritance C,D

2x 7 1/2 = 15 marks

1. Record & Viva

= 10 marks

-----  
50 marks

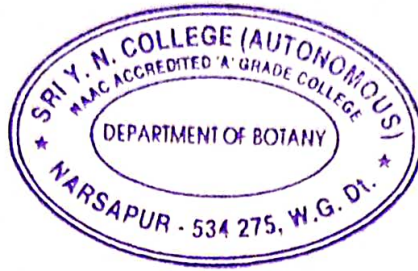
A-Onion root squash technique

B- Emasculation & Bagging

C&D Numerical problems on Mendelian Inheritance.

---

APPROVED



T.R. Lakshmi  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 T. Lakshmi 22/6/18
- 2 Dr. S. S. S.
- 3 N. S. S.
- 4
- 5 K. M. S.
- 6 G. R. S.
7. S. S. S.



## SRI Y.N. COLLEGE (AUTONOMOUS) NARASAPUR

Affiliated to Adikavi Nannayya University  
Thrice accredited by NAAC at 'A' Grade  
Recognized by UGC as "College with Potential for Excellence"

### III B. Sc - SEMESTER- V (2016-2019)

#### BOTANY PAPER-VI

Plant Ecology & Phytogeography

Total hours of teaching 60 hrs @ 3 hrs per week

#### 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: Interactions between plants and animals.

#### 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, outlines –ecotypes.
2. Plant communities- characters of a community, outlines – Frequency, density, cover, life forms, competition.
3. Interaction between plants growing in a community.

#### UNIT – IV Phytogeography

(12 hrs)

1. Principles of Phytogeography, Distribution (wides, endemic, discontinuous species)
2. Phytogeographic regions of India.
3. Phytogeographic regions of World.
4. Endemism – types and causes

#### UNIT- V: Plant Biodiversity and its importance

(12 hrs)

1. Definition, levels of biodiversity-genetic, species and ecosystem.
2. Biodiversity hotspots- Criteria, Biodiversity hotspots of India. ✓
3. Loss of biodiversity – causes and conservation (*In-situ* and *ex-situ* methods).
4. Seed banks - conservation of genetic resources and their importance

**Suggested activity :** Collection of different soils, studying their texture, observing polluted water bodies, student study projects, debates on man's activity on ecosystem and biodiversity conservation methods, visiting a nearest natural vegetation area. Visit to NGO, working in the field of biodiversity and report writing; to study Honey Bees and plants yielding honey.



APPROVED



*T. R. ...* 23/6/18  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y. N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *T. R. ...* 23/6/18
- 2 *B. ...*
- 3 *N. ...*
- 4
- 5 *K. M. ...*
- 6 *G. ...*
7. *S. ...*

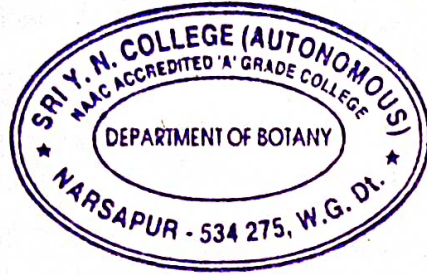
### Books for Reference:

1. Daubenmire, R.F. ( ): Plants & Environment (2nd Edn.,) John Wiley & Sons., New York
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
5. Odum E.P. (1971): Fundamentals of Ecology (2nd Edn.,) Saunders & Co., Philadelphia & Natraj Publishers, Dehradun.
6. Odum E.P. (1975): Ecology By Holt, Rinert & Winston.
7. Oosting, H.G. (1978): Plants and Ecosystem Wadworth Belmont.
8. Kochhar, P.L. (1975): Plant Ecology. (9th Edn.,) New Delhi, Bombay, Calcutta-226pp.,
9. Kumar, H.D. (1992): Modern Concepts of Ecology (7th Edn.,) Vikas Publishing Co., New Delhi.
10. Kumar H.D. (2000): Biodiversity & Sustainable Conservation Oxford & IBH Publishing I. Co Ltd. New Delhi.
11. Newman, E.I. (2000): Applied Ecology Blackwell Scientific Publisher, U.K.
12. Chapman, J.L&M.J. Reiss (1992): ecology (Principles & Applications). Cambridge University Press, U.K.
13. Cain, S.A . (1944): Foundations of Plant Geography Harper & Brothers, N.Y.
14. Mani, M.S (1974): Ecology & Biogeography of India Dr. W. Junk Publishers, The Haque
15. Good, R. (1997): The Geography of flowering Plants (2nd Edn.) Longmans, Green & Co., Inc., London & Allied Science Publishers, New Delhi

### Blue Print (Guidelines to the Paper Setter)

Unit	Essay Questions	Short Note Questions
Unit -I	2	1
Unit - II	2	2
Unit -III	2	1
Unit -IV	2	2
Unit -V	2	2
<b>Total</b>	<b>10</b>	<b>8</b>

**APPROVED**



*[Signature]*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *[Signature]*
- 2 *[Signature]* 23/6/18
- 3 *[Signature]*
- 4
- 5 K.M.V.
- 6 G. Reddy
7. *[Signature]*



**SRI Y.N. COLLEGE (AUTONOMOUS) NARASAPUR**

Affiliated to Adikavi Nannayya University

Thrice accredited by NAAC at 'A' Grade

Recognized by UGC as "College with Potential for Excellence"

III B.Sc ; V Semester (2016-2019)

**Botany Paper-VI**

( Plant Ecology and Phytogeography)

Date:

Time:

Max.Marks:75

Duration: 3 Hrs

**PART-I**

**NOTE: Draw neat labelled diagrams wherever necessary for questions in Part-I & II**  
విభాగము I మరియు II లోని ప్రశ్నలకు అవసరమైనచోట భాగములు గుర్తించిన పటములు వేయుము

**Answer any FIVE of the following. Each one carries 5 Marks. 5 x 5=25M**

ఈ క్రింది వాటిలో ఏవైనా ఐదింటికి నమాధానము వ్రాయుము. ప్రతి దానికి ఐదు మార్కులు.

- |                           |                    |
|---------------------------|--------------------|
| 1. Soil profile           | మృత్తిక పార్శ్వరేఖ |
| 2. Food Web               | ఆహారపు వల          |
| 3. Secondary productivity | ద్వితీయ ఉత్పాదకత   |
| 4. Biological Spectrum    | జీవ సంబంధ వర్ణపటం  |
| 5. Endemism               | స్థానీయత           |
| 6. Savanna Grass lands    | సవన్నాగడ్డి భూములు |
| 7. Seed banks             | విత్తన బ్యాంకులు   |
| 8. Western ghats          | పశ్చిమ కనుమలు      |

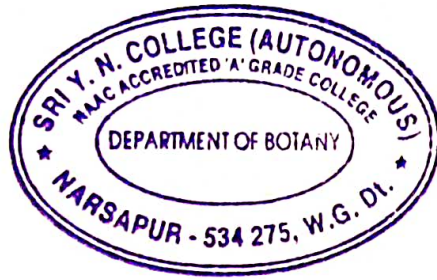
**PART-II**

**Answer any FIVE questions, choosing atleast TWO from each section. 5 x 10= 50M**  
ఏవేని ఐదు ప్రశ్నలకు నమాధానము వ్రాయుము, ప్రతీ విభాగము నుండి కనీసం రెండు వ్రాయుము.

**SECTION-A**

9. Give an account of role of light factor on plants ✓  
మొక్కలలో కాంతి కారకము యొక్క పాత్రను గురించి వ్రాయండి.
10. Write an essay on Biotic factors. ✓  
జీవ సంబంధ కారకాలపై ఒక వ్యాసము వ్రాయండి.
11. Give an account of energy flow in an ecosystem. ✓  
ఆవరణ వ్యవస్థలో శక్తి ప్రవాహం జరిగే విధానం తెలుపుము.

**APPROVED**



*T.R. M...*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *T.R. M...*
- 2 *Dr. S...*
- 3 *N. ...*
- 4
- 5 *K. M...*
- 6 *G. R...*
7. *S. ...*

12. Write an essay on Nitrogen cycle.

నత్రజనీ వలయం గూర్చి వ్యాసము వ్రాయుము.

13. Define population. Discuss briefly the various characteristics that are shown by population.

జనాభా నిర్వచించండి. జనాభా చూపించే వివిధ లక్షణాలను చర్చించుము.

### SECTION-B

14. Describe the hydrosere type of succession.

జల అనుక్రమము గురించి వివరించండి.

15. Give an account of phytogeographic regions of world.

ప్రపంచంలోని వృక్ష భౌగోళిక మండలాలను గూర్చి వ్రాయండి.

16. Give an account of phytogeographic regions of India.

భారతదేశంలోని వృక్ష భౌగోళిక మండలాలను గూర్చి వ్రాయండి

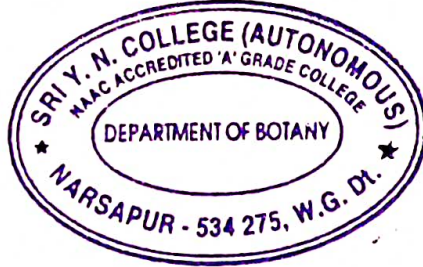
17. What is Biodiversity ? Explain the types of Bio diversity.

జీవ వైవిధ్యం అనగానేమి? జీవ వైవిధ్యం రకాలను వివరించండి.

18. Write an essay on conservation methods of biodiversity.

జీవ వైవిధ్యాన్ని సంరక్షించే వివిధ పద్ధతులను గూర్చి వ్యాసం వ్రాయండి.

**APPROVED**



*T. R. Mani*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

1. *T. R. Mani*
2. *B. S. Srinivas*
3. *N. S. Srinivas*
- 4.
5. *K. M. Srinivas*
6. *G. Srinivas*
7. *S. Srinivas*

**III B. Sc - SEMESTER- V: BOTANY PRACTICAL  
PRACTICAL PAPER-VI: PLANT ECOLOGY & PHYTOGEOGRAPHY**

---

1. Study of instruments used to measure microclimatic variables; soil thermometer, maximum and minimum thermometer, anemometer, 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 (4 each)
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. To study field vegetation with respect to stratification, canopy cover and composition.
8. Study of plants included in agro forestry and social forestry.
9. To locate the hotspots, phyto geographical regions and distribution of endemic plants in the map of India.
10. SSSThe 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.

**III B. Sc - SEMESTER- V:-BOTANY PRACTICAL MODEL PAPER  
PAPER-VI: PLANT ECOLOGY & PHYTOGEOGRAPHY**

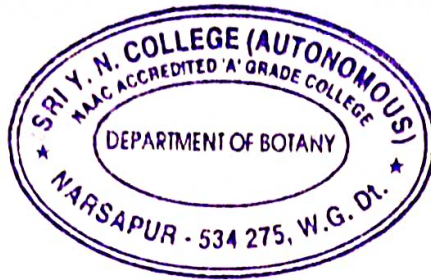
---

1. Study Project under supervision	= 15 Marks
2. Record & Viva-Voce	= 10 Marks
3. Experiment A	= 10 Marks
4. Anatomical adaptations of B (Section cutting)	= 10 Marks
5. Spotters C&D (2x2 1/2)	= 5 Marks
	-----
	Total = 50 Marks

---

1. Study Project of a surrounding Ecosystem (terrestrial or aquatic)(plant diversity, animal diversity, human activity, pollution levels, restoration efforts under supervision.
2. Presentation of the project work in Q & A session.
3. A -determination of soil porosity/PH/percolation/retaining capacity.
4. B- Xerophyte/Hydrophyte anatomical adaptations.
5. C & D-anemometer/rain gauge/lux meter.

APPROVED



*T. R. ...*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

1. *T. R. ...* 22/10/18
2. *B. ...*
3. *N. ...*
- 4.
5. *K. M. ...*
6. *G. ...*
7. *S. ...*





# SRI Y.N. COLLEGE (AUTONOMOUS) NARASAPUR

Affiliated to Adikavi Nannayya University

Thrice accredited by NAAC at 'A' Grade

Recognized by UGC as "College with Potential for Excellence"

III B.Sc ; SEMESTER-VI (2016-2019)

**BOTANY PAPER-VII (C) ELECTIVE**

**(Plant tissue culture and its biotechnological applications)**

## **UNIT I: PLANT TISSUE CULTURE – 1**

**(12hrs)**

1. History of plant tissue culture research - basic principles of plant tissue callus culture, meristem culture, organ culture, Totipotency of cells, differentiation and dedifferentiation.
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; Germplasm conservation.

## **UNIT III: RECOMBINANT DNA TECHNOLOGY**

**(12hrs)**

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)**

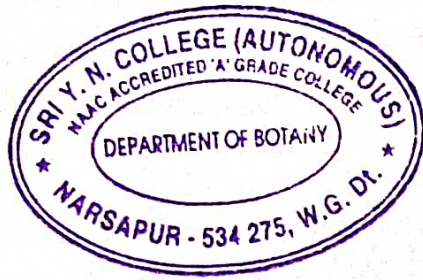
1. Methods of gene transfer- Agrobacterium-mediated, direct gene transfer by Electroporation, Microinjection, Micro projectile bombardment.
2. Selection of transgenics– selectable marker and reporter genes (Luciferase, GUS, GFP).

## **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)

**APPROVED**



*T. R. M. 23/6/18*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y. N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *T. R. M. 23/6/18*
- 2 *Dr. S. S. S.*
- 3 *N. L. M.*
- 4
- 5 *K. M. V.*
- 6 *G. R. S.*
7. *Dr. S. S.*

## Books for Reference:

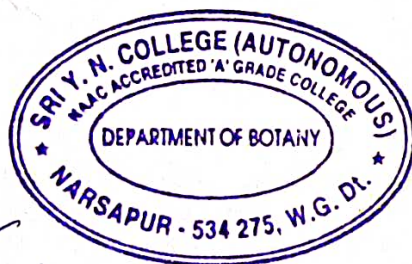
1. Pullaiah, T. and M.V.Subba Rao. 2009. Plant Tissue culture. Scientific Publishers, New Delhi.
2. Bhojwani, S.S. and Razdan, M.K., (1996). Plant Tissue Culture: Theory and Practice. Elsevier Science Amsterdam. The Netherlands.
3. Glick, B.R., Pasternak, J.J. (2003). Molecular Biotechnology- Principles and Applications of recombinant DNA. ASM Press, Washington.
4. Bhojwani, S.S. and Bhatnagar, S.P. (2011). The Embryology of Angiosperms. Vikas Publication House Pvt. Ltd., New Delhi. 5th edition.
5. Snustad, D.P. and Simmons, M.J. (2010). Principles of Genetics. John Wiley and Sons, U.K. 5th edition.
6. Stewart, C.N. Jr. (2008). Plant Biotechnology & Genetics: Principles, Techniques and Applications. John Wiley & Sons Inc. U.S.A.

**Suggested Activities:** In vitro initiation of callus on artificial medium, seminars on utilization of rDNA technology, debates on applications of Biotechnology (whether it is a boon or bane to the society) studying growth patterns, vegetative characteristics of Bt.cotton and identifying the features of its pest resistance

## Blue Print (Guidelines to the Paper Setter)

Unit	Essay Questions	Short Note Questions
Unit -I	2	2
Unit - II	2	1
Unit -III	2	2
Unit -IV	2	1
Unit -V	2	2
<b>Total</b>	<b>10</b>	<b>8</b>

**APPROVED**



CHAIRMAN 23/6/18  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

1. T. Roy 23/6/18
2. Dr. S. S. Bhojwani
3. N. S. M.
- 4.
5. K. M.
6. G. R.
7. D. W.



SRI Y.N. COLLEGE (AUTONOMOUS) NARASAPUR – 534 275

Affiliated to Adikavi Nannayya University

Thrice accredited by NAAC at 'A' Grade

Recognized by UGC as "College with Potential for Excellence"

III B.Sc ; SEMESTER –VI(2016-2019)

**BOTANY PAPER-VIIC(ELECTIVE)**

( Plant Tissue Culture and its biotechnological applications)

Date:

Max.Marks:75

Time:

Duration: 3 Hrs

**PART-I**

**NOTE: Draw neat labelled diagrams wherever necessary for questions in Part-I & II**  
విభాగము I మరియు II లోని ప్రశ్నలకు అవసరమైనచోట భాగములు గుర్తించిన పటములు వేయుము

**Answer any FIVE of the following. Each one carries 5 Marks. 5 x 5=25M**

ఈ క్రింది వాటిలో ఏవైనా ఐదింటికి నమాధానము వ్రాయుము. ప్రతి దానికి ఐదు మార్కులు.

- |                              |                                  |
|------------------------------|----------------------------------|
| 1. M.S Medium                | M.S యానకం                        |
| 2. Somatic embryogenesis     | శాఖీయ పిండాభివృద్ధి              |
| 3. Cryopreservation          | క్రయోప్రిజర్వేషన్                |
| 4. Restriction Endonucleases | రిస్ట్రిక్షన్ ఎండోన్యూక్లియేజ్లు |
| 5. c DNA Libraries           | c DNA లైబ్రెరీలు                 |
| 6. Agrobacterium             | ఆగ్రో బాక్టీరియా                 |
| 7. Crop improvement          | సస్యాభివృద్ధి                    |
| 8. Golden rice.              | బంగారు వరి                       |

**PART-II**

**Answer any FIVE questions, choosing atleast TWO from each section. 5 x 10= 50M**

ఏవేని ఐదు ప్రశ్నలకు నమాధానము వ్రాయుము, ప్రతి విభాగము నుండి కనీసం రెండు వ్రాయుము.

**SECTION-A**

9. Write an essay on different aspects coming across in Tissue Culture.

కణజాల వర్ధనములోని వివిధ అంశములపై వ్యాసము వ్రాయుము.

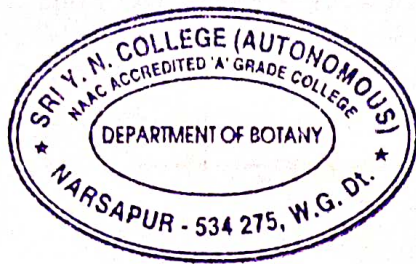
10. Write an essay on Callus culture.

కాలస్ వర్ధనం పై ఒక వ్యాసము వ్రాయుము.

11. Describe the various steps in embryo culture.

పిండ వర్ధనంలోని వివిధ దశలను వివరింపుము.

APPROVED



Thy 22/6/18  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 T. R. [Signature] 22/6/18
- 2 B. [Signature]
- 3 N. [Signature]
- 4
- 5 K. M. [Signature]
- 6 G. [Signature]
7. [Signature]

12. Write an essay on production of secondary metabolites.

ద్వితీయా జీవక్రియా ఉత్పన్నాల యొక్క ఉత్పత్తి పై వ్యాసము వ్రాయుము.

13. Explain the different types of cloning vectors.

వివిధ రకముల క్లోనింగ్ వాహకాలను గూర్చి వివరింపుము.

### SECTION-B

14. Describe the process of Gene cloning.

జన్యు క్లోనింగ్ విధానమును వర్ణింపుము.

15. Explain the gene transfer methods.

జన్యు బదిలీ పద్ధతులను గూర్చి వివరింపుము.

16. Write an essay on role of selectable markers in selection of transgenics.

జన్యు పరివర్తితాలను గుర్తించుటలో ఎంచుకోబడిన మార్కర్ల యొక్క పాత్రను గూర్చి వ్యాసము వ్రాయుము.

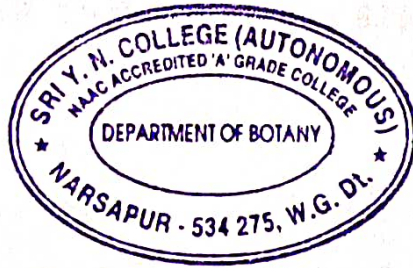
17. Explain the applications of biotechnology in various fields.

వివిధ రంగాములలో జీవ సాంకేతిక శాస్త్ర అనువర్తనాలను గూర్చి వివరింపుము.

18. What are transgenic plants? Write about any four transgenic plants.

జన్యు పరివర్తిత మొక్కలు అనగానేమి? ఏవైనా నాలుగు జన్యు పరివర్తిత మొక్కలను గూర్చి వ్రాయుము.

**APPROVED**



CHAIRMAN 22/6/18  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

1. T. R. M. 22/6/18
2. B. S. S.
3. K. S. M.
- 4.
5. K. M. V.
6. G. P. S.
7. S. M. S.

**III B. Sc – BOTANY PRACTICALSYLLABUS**  
**SEMESTER- VI**  
**Practical Paper VII-(C): Plant Tissue Culture & Plant Biotechnology**  
**Total hours of teaching 30hrs @ 2hrs per week**

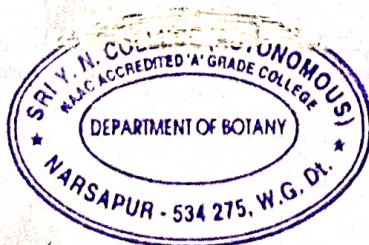
1. (a) Preparation of MS medium.  
 (b) Demonstration of in vitro sterilization methods and inoculation methods using leaf and nodal explants of Tobacco/ Datura/ Brassica etc.
2. Study of embryo and culture, micro propagation of Banana, somatic embryogenesis, artificial seeds through photographs.
3. Construction of restriction map of circular and linear DNA from the data provided.
4. Study of methods of gene transfer through photographs: Agrobacterium-mediated, direct gene transfer by electroporation, microinjection, and micro projectile bombardment.
5. Different steps involved in genetic engineering for production of Bt. cotton, Goldenrice, Flaver saver tomato through photographs.
7. Isolation of plasmid DNA.
8. Restriction digestion and gel electrophoresis of plasmid DNA (optional)
9. Field visit to a lab involved in tissue culture
10. Study project under supervision of lecturer – tissue culture/ genetic engineering

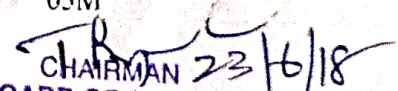
**PRACTICAL MODEL PAPER**




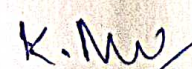
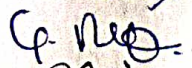
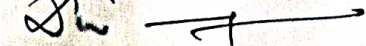
**Paper-VII-(C) : Plant Tissue Culture & Plant Biotechnology**

1. Project work	15 M
Viva voice on study project	05M
2. DNA isolation technique / Synthetic seeds procedure	08M
3. Identify and write notes on A, B, C	3*4=12M
4. Field report	05M
5. Record	05M

**APPROVED**



  
 CHAIRMAN 23/6/18  
 BOARD OF STUDIES  
 DEPARTMENT OF BOTANY  
 SRI Y.N. COLLEGE (AUTONOMOUS)  
 (NAAC ACCREDITED 'A' GRADE COLLEGE)  
 NARSAPUR - 534 275

- 1 
- 2  23/6/18
- 3 
- 4
- 5  K.M.V
- 6 
- 7 



SRI Y.N. COLLEGE (AUTONOMOUS), NARASAPUR – 534 275

Affiliated to Adikavi Nannayya University

Thrice accredited by NAAC at 'A' Grade

Recognized by UGC as "College with Potential for Excellence"

III B.Sc ; VI Semester(2016-2019) (CLUSTER ELECTIVE-A)

**BOTANY Paper-VIII-A-1**

( Plant Diversity and Human Welfare)

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

- i. Genetic diversity, Species diversity, Plant diversity at the ecosystem level, Agro biodiversity and cultivated plant taxa, wild taxa.
- ii. Values and uses of biodiversity: Ethical and aesthetic values,
- iii. Methodologies for valuation, Uses of plants.

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

- i. Loss of genetic diversity, Loss of species diversity, Loss of ecosystem diversity, Loss of agro biodiversity, projected scenario for biodiversity loss
- ii. 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)**

- i. Environmental Impact Assessment (EIA), Geographical Information System GIS, Participatory resource appraisal, Ecological footprint with emphasis on carbon footprint, Resource accounting;
- ii. Solid and liquid waste management

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

- i. Conservation of genetic diversity, species diversity and ecosystem diversity, *In situ* and *ex situ* conservation,
- ii. Social approaches to conservation, Biodiversity awareness programmes, Sustainable development.

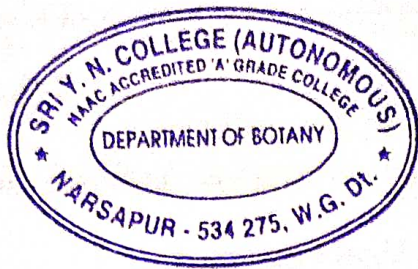
**Unit- V: Role of plants in relation to Human Welfare (12hrs)**

- i. Importance of forestry, their utilization and commercial aspects-
  - a) Avenue trees, b) ornamental plants of India. c) Alcoholic beverages through ages.
- ii. Fruits and nuts: Important fruit crops their commercial importance.

Wood, fiber and their uses.



APPROVED



*T. R. (22/6/18)*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y. N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

1. *T. R. (23/6/18)*
2. *Dr. S. S. S.*
3. *N. S. S.*
- 4.
5. *K. M. W.*
6. *G. R. S.*
7. *S. S. S.*

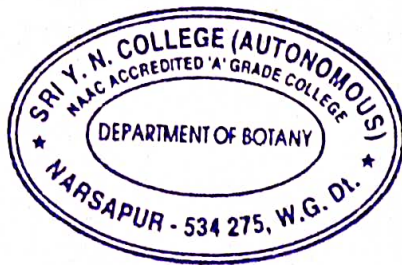
**Suggested Readings:**

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.

**Suggested activities:** Study of flora and its diversity in the college campus or local area, enumerating wild and exotic species (*Parthenium*, Water hyacinth etc.)

Project work on any one of the International organizations striving for preservation of biodiversity, study of conservation efforts of local people, and civic bodies, study of locally available fruits in different seasons, enumerating the avenue plantations and their diversity in your town/city

**APPROVED**



*T. R. M.*  
CHAIRMAN 23/6/18  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

1 *T. R. M.* 23/6/18

2 *B. S. S.*

3 *N. S. M.*

4

5 *K. M.*

6 *G. P.*

7. *S. M.*

SRI Y.N. COLLEGE (AUTONOMOUS), NARASAPUR – 534 275

Affiliated to Adikavi Nannayya University

Thrice accredited by NAAC at 'A' Grade

Recognized by UGC as "College with Potential for Excellence"

III B.Sc ; VI Semester(2016-2019) (CLUSTER ELECTIVE-A)

**BOTANY Paper-VIII-A-1**

( Plant Diversity and Human Welfare)



Date:

Max.Marks:75

Time:

Duration: 3 Hrs

**PART-I**

**NOTE: Draw neat labelled diagrams wherever necessary for questions in Part-I & II**  
విభాగము I మరియు II లోని ప్రశ్నలకు అవసరమైనచోట భాగములు గుర్తించిన పటములు వేయుము

**Answer any FIVE of the following. Each one carries 5 Marks. 5 x 5=25M**

ఈ క్రింది వాటిలో ఏవైనా ఐదింటికి నమాధానము వ్రాయుము. ప్రతి దానికి ఐదు మార్కులు.

1. Species diversity

జాతి వైవిధ్యత

2. Effects on loss of Agrobiodiversity

వ్యవసాయ జీవ వైవిధ్యతను కోల్పోవుట వలన కలిగే ప్రభావాలు

3. NBPGR /

ఎన్.బి.పి.జి.ఆర్

4. GIS

జి.ఐ.యస్

5. Carbon foot print

కార్బన్ ఫుట్ ప్రింట్

6. Biodiversity awarness programmes

జీవ వైవిధ్యంపై అవగాహన కార్యక్రమాలు

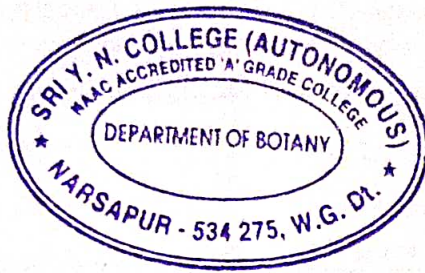
7. Avenue trees

నీడనిచ్చే మొక్కలు

8. Fiber Yielding Plants

నారలను ఇచ్చే మొక్కలు

APPROVED



*T. P. L.* 23/6/18  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y. N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *T. P. L.* 23/6/18
- 2 *Dr. S. S. S.*
- 3 *N. S. S.*
- 4
- 5 *K. M. S.*
- 6 *G. S. S.*
7. *S. S. S.*

## PART-II

Answer any FIVE questions, choosing atleast TWO from each section. 5 x 10= 50M  
ఏవేని ఐదు ప్రశ్నలకు నమాధానము వ్రాయుము, ప్రతి విభాగము నుండి కనీసం రెండు వ్రాయుము.

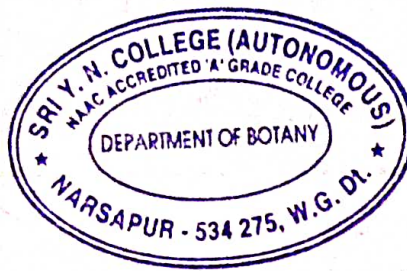
### SECTION-A

9. What is Bio diversity? Explain the levels of Biodiversity.  
జీవ వైవిధ్యం అనగానేమి? జీవ వైవిధ్య స్థాయిలను వివరించండి.
10. Write an essay on values and uses of Biodiversity.  
జీవ వైవిధ్య విలువలు మరియు ఉపయోగాలు వ్రాయండి.
11. Write an essay on international efforts for conservation of Biodiversity.  
జీవ వైవిధ్యం సంరక్షణను అంతర్జాతీయ స్థాయిలో కృషి చేస్తున్న సంస్థల గురించి ఒక వ్యాసం వ్రాయుము.
12. Give an account on environmental impact assessment.  
పర్యావరణ ప్రభావ పరీక్షల గురించి వివరింపుము.
13. Describe the present scenario for biodiversity loss.  
జీవ వైవిధ్య కోల్పోవుటలో ప్రస్తుత పరిస్థితులను గూర్చి వ్రాయండి.

### SECTION-B

14. Write an essay on Solid Waste Management.  
ఘన వ్యర్థాల నిర్వహణ గురించి వ్యాసం వ్రాయండి.
15. Write an essay on Conservation methods of Biodiversity.  
జీవ వైవిధ్యాన్ని సంరక్షించే వివిధ పద్ధతులను గూర్చి వ్యాసం వ్రాయండి.
16. Give an account on sustainable development.  
సుస్థిరాభివృద్ధిని గూర్చి వివరింపుము.
17. Describe the different ornamental plants of India.  
భారతదేశంలోని వివిధ అలంకరణ మొక్కలను గూర్చి వర్ణించండి.
18. Explain the Fruit Yielding plants.  
ఫలాలను ఇచ్చే మొక్కలను గూర్చి వివరించండి.

APPROVED



*[Signature]*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

1. *[Signature]*
2. *[Signature]* 23/6/18
3. *[Signature]*
- 4.
5. *[Signature]*
6. *[Signature]*
7. *[Signature]*

**Paper – VIII-A-1 : Practicals: PLANT DIVERSITY AND HUMAN WELFARE**

- 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) Write up on the conservation efforts of International organizations.
- 8) Study of Solid and Liquid waste management systems in rural/urban areas.

**Domain skills expected to achieve:** Identification of exotic plant species, identification of forest trees based on the characteristics of bark, flowers and fruits, understanding the preservation methods of fresh and dry fruits, understanding the methods of safe disposal of biodegradable and non-biodegradable wastes

**SCHEME OF PRACTICAL EXAMINATION**

**PRACTICAL- VIII-A-1 : Cluster Elective (MODEL QUESTION PAPER)  
PLANT DIVERSITY AND HUMAN WELFARE**

Time: 3hrs

Max. Marks: 50

---

I. Assign the plants **A, B and C** to their respective families, giving reasons, family name and classification-2 marks, important diagrams- 3 marks.

**15 marks**

II. Give the protocol of **D**

**10 marks**

III. Comment on specimens **E, F and G**

**3x3 = 9 marks**

IV. Report on Field visit

**6 marks**

To study sources of firewood (10 plants), timber-yielding trees (10 trees) and bamboos.

V. Viva-Voce

**5 marks**

VI. Practical Record

**5 marks**

**KEY**

A-Cultivated Plant

B- Wild Plant

C –Exotic plant

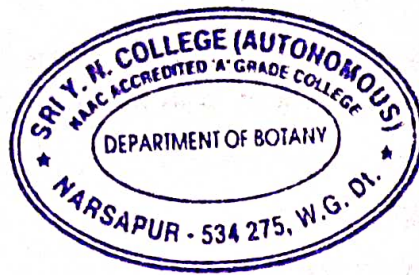
D- Preservation and canning of fruits, solid and liquid waste management systems in rural/urban areas

E. Bark/wood/fruit yielding plant

F. Nuts/ Alcoholic beverage plant

G. wood /Fibre yielding plant

**APPROVED**



*T. Raghav*  
23/6/18  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *T. Raghav* 23/6/18
- 2 *Bh. S. S. S.*
- 3 *N. S. M.*
- 4
- 5 *K. M. V.*
- 6 *G. M. S.*
7. *S. W. S.*





SRI Y.N. COLLEGE (AUTONOMOUS) NARASAPUR – 534 275

Affiliated to Adikavi Nannayya University

Thrice accredited by NAAC at 'A' Grade

Recognized by UGC as "College with Potential for Excellence"

III B.Sc ; VI Semester (2016-2019) (CLUSTER ELECTIVE-A)

**BOTANY Paper-VIII-A-2**

( Ethnobotany and Medicinal Botany)

**Unit –I: Ethnobotany**

(12hrs)

- i. Introduction, concept, scope and objectives; Ethnobotany as an interdisciplinary science. The relevance of ethno botany in the present context
- ii. Major and minor ethnic groups or Tribals of India, and their life styles.
- iii. 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)

- i. Role of ethnobotany in modern medicine with special example *Rauvolfia serpentina*, *Trichopus zeylanicus*, *Artemisia annua*, *Withania somnifera*.
- ii. Medico-ethnobotanical sources in India
- iii. Significance of the following plants in ethno botanical practices (along with their habitat and morphology)  
a) *Azadirachta indica*, b) *Ocimum sanctum*, c) *Vitex negundo*, d) *Gloriosa superba*,  
e) *Tribulus terrestris*, f) *Phyllanthus niruri*, g) *Cassia auriculata*, h) *Indigofera tinctoria*, i) *Senna auriculata* j) *Curcuma longa*.
- iv. Role of ethnic groups in the conservation of plant genetic resources.

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

- i. Sharing of wealth concept with few examples from India.
- ii. Biopiracy, Intellectual Property Rights and Traditional Knowledge.

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

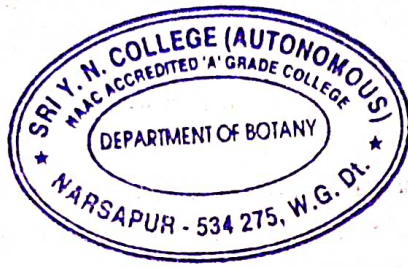
- i. Definition and Scope-**Ayurveda**: History, origin, panchamahabhutas, saptadhatu and tridosha concepts, Rasayana, plants used in ayurvedic treatments.
- ii. **Siddha**: Origin of Siddha medicinal systems, Basis of Siddha system, plants used in Siddha medicine.
- iii. **Unani**: History, concept: Umoor-e- tabiya, tumors treatments/ therapy, polyherbal formulations (in brief).

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

- i. Definition: endemic and endangered medicinal plants,
- ii. Red list criteria
- iii. *In situ* conservation: Biosphere reserves, sacred groves, National Parks
- iv. *Ex situ* conservation: Botanical Gardens.

**Suggested Activities:** Studying plant utilization methods by tribal/rural/migrant populations for their beverages, food, medicinal and uses, seminars on role of ethnic groups in conservation of plant genetic resources, project work on traditional knowledge about plant medicines, study of indigenous medicinal sciences and their efficacy.

**APPROVED**



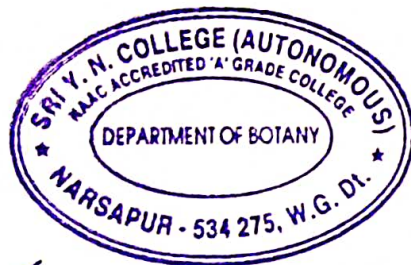
*T. R. ...*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *T. R. ...*
- 2 *Dr. ...*
- 3 *N. ...*
- 4
- 5 *K. ...*
- 6 *G. ...*
7. *S. ...*

### 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
- 6) Rama Ro, N and A.N. Henry (1996). The Ethnobotany of Eastern Ghats in Andhra Pradesh, India. Botanical Survey of India. Howrah.
7. Trivedi P C, 2006. Medicinal Plants: Ethnobotanical Approach, Agrobios, India.
8. Purohit and Vyas, 2008. Medicinal Plant Cultivation: A Scientific Approach, 2nd edn. Agrobios, India.
9. Pal, D.C. & Jain, S.K., 1998. Tribal Medicine. Naya Prakash Publishers, Calcutta
10. Raychudhuri, S.P., 1991. (Ed.) Recent advances in Medicinal aromatic and spice crops. Vol.1, Today & Tomorrow's printers and publishers, New Delhi

**APPROVED**



*T. R. ...*  
CHAIRMAN 23/6/18  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *T. R. ...* 23/6/18
- 2 *Bl. ...*
- 3 *M. ...*
- 4
- 5 *K. ...*
- 6 *G. ...*
7. *Su ...*



SRI Y.N. COLLEGE (AUTONOMOUS) NARASAPUR – 534 275

Affiliated to Adikavi Nannayya University

Thrice accredited by NAAC at 'A' Grade

Recognized by UGC as "College with Potential for Excellence"

III B.Sc ; VI Semester (2016-2019) (CLUSTER ELECTIVE-A)

**BOTANY Paper-VIII-A-2**

(Ethnobotany and Medicinal Botany)

Date:

Time:

Max.Marks:75

Duration: 3 Hrs

**PART-I**

**NOTE:** Draw neat labelled diagrams wherever necessary for questions in Part-I & II  
విభాగము I మరియు II లోని ప్రశ్నలకు అవసరమైనచోట భాగములు గుర్తించిన పటములు వేయుము

Answer any FIVE of the following. Each one carries 5 Marks. 5 x 5=25M

ఈ క్రింది వాటిలో ఏవైనా ఐదింటికి నమాధానము వ్రాయుము. ప్రతి దానికి ఐదు మార్కులు.

- |                         |                       |
|-------------------------|-----------------------|
| 1. Resins & Oils        | రెసిన్లు మరియు నూనెలు |
| 2. Rauwolfia serpentina | రావుల్ఫియా సర్పెంటైనా |
| 3. Ocimum Sanctum       | ఆసిమమ్ సాంక్టమ్       |
| 4. Biopiracy            | బయోపైరసి              |
| 5. Phyllanthus niruri   | ఫిల్లాంథస్ నిరూరి     |
| 6. Siddha Medicine      | సిద్ధా వైద్యం         |
| 7. Red data book        | అరుణ వర్ణ పుస్తకం     |
| 8. Botanical Gardens    | ఉద్యానవనాలు           |

**PART-II**

Answer any FIVE questions, choosing atleast TWO from each section. 5 x 10= 50M

ఏవేని ఐదు ప్రశ్నలకు నమాధానము వ్రాయుము, ప్రతీ విభాగము నుండి కనీసం రెండు వ్రాయుము.

**SECTION-A**

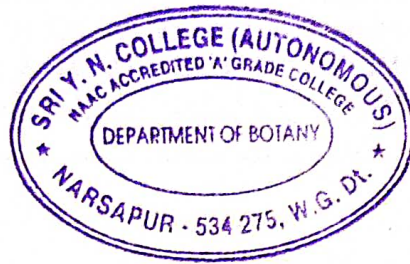
9. Write an essay on Ethnobotany.

గిరిజన వృక్ష శాస్త్రం పై వ్యాసం వ్రాయుము.

10. Write an essay on food plants and intoxicants plants used by the tribal populations.

గిరిజన జనాభా ఉపయోగించే ఆహార మొక్కలు మరియు విషరహిత మొక్కల పై వ్యాసం వ్రాయండి.

APPROVED



*TRM 23/6/18*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *T R M 23/6/18*
- 2 *[Signature]*
- 3 *N. L. M*
- 4
- 5 *K. M. W*
- 6 *G. P. S.*
7. *D. W. A*

11. Give an account of morphology of Aswagandha with chemical constituents and Therapeutic uses.

అశ్వగంధ బాహ్య స్వరూపం వర్ణించి, దానిలోని రసాయన పదార్థాలు మరియు వైద్య చికిత్సలో దాని ఉపయోగాలు.

12. Write brief account of following plants.

క్రింది మొక్కలను గూర్చి లఘు వాఖ్య వ్రాయుము.

(a) Azadirachta indica

(b) Curcumma longa

అజాడిరెక్ట ఇండిక

కర్కుమా లాంగ

13. Write an essay on sharing of wealth concepts in India.

భారతదేశంలో ఆరోగ్య విధానాల గూర్చి వ్యాసం వ్రాయండి.

### SECTION-B

14. Explain the Intellectual Property Rights.

ఇంటెలెక్చ్యుల్ ప్రాపర్టీ హక్కులను వివరించుము

15. Write an essay on Ayurveda system of Medicine.

ఆయుర్వేద వైద్య విధానం గురించి ఒక వ్యాసం వ్రాయుము.

16. Write an essay on Unani system of Medicine.

యునాని వైద్య విధానం గురించి ఒక వ్యాసం వ్రాయుము.

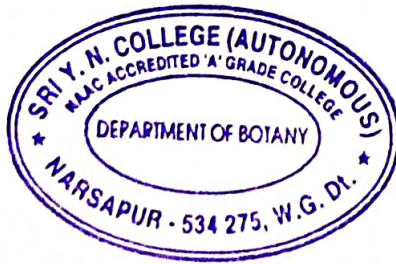
17. Write about the some endemic and endangered medicinal plants.

స్థానీయ మరియు అంతరించి పోతున్న కొన్ని ఔషధ మొక్కలను గూర్చి వివరింపుము.

18. Write an essay on insitu conservation.

స్వస్థానీయ సంరక్షణ పద్ధతులను గూర్చి వ్యాసం వ్రాయండి.

**APPROVED**



*T. B. ...*  
23/6/18

CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y. N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1
- 2 *శ్రీ శివ*
- 3 *N. L. N.*
- 4
- 5 *K. M.*
- 6 *G. P.*
- 7 *N. S.*

**Cluster Elective VIII-A-2: Practical:**  
**ETHNOBOTANY AND MEDICINAL BOTANY**

1. Ethnobotanical 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. **Domain skills expected to achieve:** Identification of various plant parts used as medicines by ethnic groups, understanding the difference between ancient wisdom and modern system of medicine, traditional medicine at the rescue of curing drug resistant maladies like malaria and viral diseases, understanding the role of spices in Indian kitchens, their therapeutic role

**PRACTICAL- VIII-A-2 Cluster Elective : MODEL QUESTION PAPER**  
**Paper VIII-A-2: ETHNOBOTANY AND MEDICINAL BOTANY**

**Time: 3 Hours**

**Max. Marks- 50**

---

I. Identify the specimen A- Give reasons (morphological and anatomical) and draw labeled sketches 15marks

II. Identify and write about the medicinal uses of B-and C-

2x5= 10 marks.

III. Comment on D and E.

2x 4=8 marks

IV. Report on Field visit:

7 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

5 marks

VI. Record

5 marks

Total

-----  
50 marks

**KEY**

A-Plants given in unit II (i)

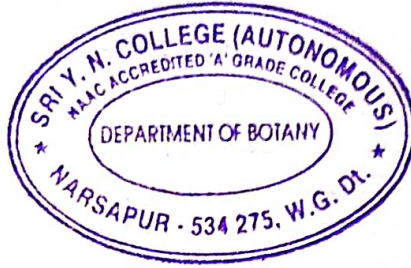
B-Plants used in Ayurvedic preparations (Amla in Chyavanprash, Senna in Laxatives)

C - - Do -

D. Photographs of National parks, Biosphere reserves and Botanical gardens.

E. Photograph of famous personalities in Ayurveda/Siddha medicine.

APPROVED



*T. Prasad*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *T. Prasad*
- 2 *B. S. S. 23/6/18*
- 3 *N. L. K.*
- 4
- 5 *K. M. V.*
- 6 *G. Reddy*
7. *S. W. S.*





SRI Y.N. COLLEGE (AUTONOMOUS) NARASAPUR – 534 275  
Affiliated to Adikavi Nannayya University  
Thrice accredited by NAAC at 'A' Grade  
Recognized by UGC as "College with Potential for Excellence"  
III B.Sc ;VI Semester(2016-2019) (CLUSTER ELECTIVE-A)  
**BOTANY Paper-VIII-A-3**  
( Pharmacognosy and Phytochemistry)

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

Definition, Importance, Classification of drugs - Chemical and Pharmacological, Drug evaluation methods

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

Organoleptic and microscopic studies with reference to nature of active principles and common adulterants of *Alstonia scholaris* (bark), *Adhatoda vasica* (leaf), *Strychnos nuxvomica* (seed), *Rauwolfia serpentine* (root) and *Zinziber officinalis Catharanthus roseus*.

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

- i. Definition of primary and secondary metabolites and their differences, major types - terpenes, phenolics, alkaloids, terpenoids, steroids.
- ii. A brief idea about extraction of alkaloids. Origin of secondary metabolites – detailed account of acetate pathway, mevalonate pathway, shikimate pathway.

**UNIT-IV: Phytochemistry: (12hrs)**

Biosynthesis and sources of drugs:

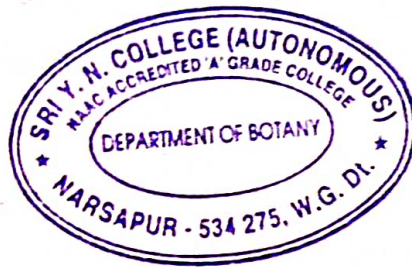
- (i) Phenols and phenolic glycosides : structural types, biosynthesis, importance of simple phenolic compounds, tannins, anthraquinones, coumarins and furanocoumarins, flavones and related flavonoid glycosides, anthocyanins, betacyanins, stilbenes, lignins and lignans).
- (ii) Steroids, sterols, saponins, withanolides, ecdysones, cucurbitacins: Biosynthesis, commercial importance.
- (iii) Alkaloids: Different groups, biosynthesis, bioactivity.
- (iv) Volatile oils, aromatherapy.

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

- i. Vaccines, toxins and toxoids, antitoxins, immune globulins, antiserums,
- ii. Vitamins, Antibiotics – chemical nature, mode of action.
- iii. Pharmacological action of plant drugs – tumor inhibitors, PAF antagonists, antioxidants, phytoestrogens and others.
- iv. Role of different enzyme inhibitors.

**Suggested Activities:** Isolation techniques of active principles from various parts of popular medicinal plants, debates on the efficacy of plant medicines and palliative cure, volatile oils from plants-extraction methods, project work on crude drugs

**APPROVED**



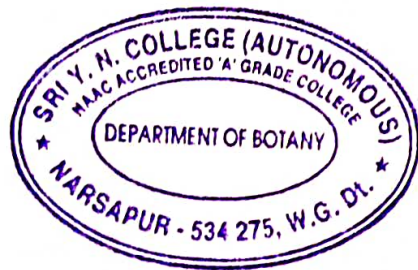
*T. R. M. 23/6/18*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y. N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *T. R. M. 23/6/18*
- 2 *Dr. R. R. R.*
- 3 *H. S. M.*
- 4
- 5 *K. M. M.*
- 6 *G. R. R.*
7. *D. W. R.*

## 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.
5. Harborne, J. B. 1998. Phytochemical methods –a guide to modern techniques of plant analysis 3 rd edition, Chapman and Hall
6. Datta & Mukerji, 1952. Pharmacognosy of Indian roots of Rhizome drugs. Bulletin No.1 Ministry of Health, Govt. of India.

**APPROVED**



*T. R. M. 23/6/18*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

1 *T. R. M. 23/6/18*

2 *Bh. Singh*

3 *N. S. M.*

4

5 *K. M. W.*

6 *G. P. S.*

7. *S. W.*

SRI Y.N. COLLEGE (AUTONOMOUS) NARASAPUR – 534 275

Affiliated to Adikavi Nannayya University

Thrice accredited by NAAC at 'A' Grade

Recognized by UGC as "College with Potential for Excellence"

III B.Sc ; VI Semester(2016-2019) (CLUSTER ELECTIVE-A)

**BOTANY Paper-VIII-A-3**

( Pharmacognosy and Phytochemistry)

Date:

Time:

Max.Marks:75

Duration: 3 Hrs

**PART-I**

**NOTE: Draw neat labelled diagrams wherever necessary for questions in Part-I & II**  
విభాగము I మరియు II లోని ప్రశ్నలకు అవసరమైనచోట భాగములు గుర్తించిన పటములు వేయుము

**Answer any FIVE of the following. Each one carries 5 Marks. 5 x 5=25M**

ఈ క్రింది వాటిలో ఏవైనా ఐదింటికి సమాధానము వ్రాయుము. ప్రతి దానికి ఐదు మార్కులు.

1. Importance of Pharmacognosy  
ఫార్మకోగ్నోసి ప్రాముఖ్యత
2. Catharanthus roseus Active principle  
కెథరాంథస్ రోజియస్ జీవ క్రియాత్మక వనరు
3. Write any five Alkaloids in plants.  
మొక్కలలోని ఏవైనా ఐదు ఆల్కలాయిడ్లను వ్రాయండి.
4. Adulterants of Zingiber officinalis  
జింజీబర్ అఫిసినాలిస్ తో కల్తీ పదార్థాలు
5. Mevalonate pathway  
మెవలోనేట్ పథం
6. Aromatherapy  
ఎరోమాథెరపీ
7. Importance of Tannins  
టానిన్ల ప్రాముఖ్యత
8. Antiserums  
యాంటిసీరమ్లు

**APPROVED**



*T. R. M. 23/6/18*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *T. R. M.*
- 2 *B. R. S. 23/6/18*
- 3 *N. L. M.*
- 4
- 5 *K. M. W.*
- 6 *G. N. S.*
7. *D. W. A.*

## PART-II

Answer any FIVE questions, choosing atleast TWO from each section. 5 x 10= 50M

ఏవేని ఐదు ప్రశ్నలకు నమాధానము వ్రాయుము, ప్రతి విభాగము నుండి కనీసం రెండు వ్రాయుము.

### SECTION-A

9. Write an essay on classification of drugs.

డ్రగ్స్ వర్గీకరణను గూర్చి వ్యాసము వ్రాయుము.

10. Discuss the methods of Drug evaluation.

డ్రగ్స్ మూల్యాంకన పద్ధతులను చర్చించండి.

11. Write an essay on Active principle and common adulterants of Alstonia and Adathoda.

ఆల్స్టోనియా మరియు అడథోడ యొక్క సాధారణ జీవనాధార వనరు మరియు కల్తీ గూర్చి వ్రాయండి.

12. Explain the active principle and adulteration of strychnos nuxvomica and Rauwolfia serpentina.

స్ట్రిక్నాస్ నక్స్వామిక మరియు రావుల్ఫియా సర్పెంటైనా యొక్క సాధారణ జీవనాధార వనరు మరియు కల్తీను గూర్చి వివరించండి.

13. Write an essay on secondary metabolites.

ద్వితీయ జీవ క్రియా ఉత్పన్నాలను గూర్చి వ్యాసం వ్రాయండి.

### SECTION-B

14. Explain the importance of Phenolic compounds and coumarins.

ఫినాలిక్ సంయోగపదార్థాలు మరియు కౌమారినల ప్రాముఖ్యతను వివరించండి.

15. Write an essay on BioSynthesis of Alkaloids.

ఆల్కలాయిడ్ల యొక్క జీవ సంశ్లేషణను గూర్చి వ్యాసం వ్రాయండి.

16. Write an essay on extraction of Alkaloids.

ఆల్కలాయిడ్ల నిష్కర్షణను గూర్చి వ్యాసం వ్రాయండి.

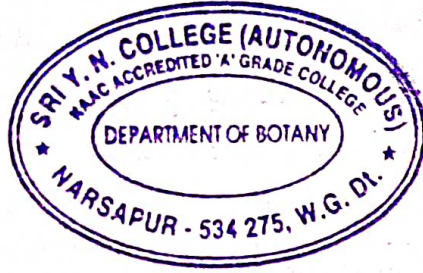
17. Discuss about Vitamins.

విటమిన్లను గూర్చి చర్చించండి.

18. Explain the role of different enzyme inhibitors.

వివిధ ఎంజైమ్ నిరోధకాల పాత్రను గూర్చి వివరించండి.

**APPROVED**



*T. R. ... 23/6/18*  
CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y. N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *T. R. ... 23/6/18*
- 2 *P. R. ...*
- 3 *M. L. ...*
- 4
- 5 *K. M. ...*
- 6 *G. R. ...*
7. *S. W. ...*

## VIII-A-3: Pharmacognosy and Phytochemistry: PRACTICALS

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)
- Domain skills expected to achieve:** Identification of various plant parts used as medicines, extraction of active principles from them, isolation by chromatographic techniques, learning callus culture techniques for secondary metabolite enrichment and understanding ethno-pharmacological principles

### PRACTICAL: VIII-A-3 Cluster Elective: MODEL QUESTION PAPER

#### Pharmacognosy and Phytochemistry

Time: 3hrs.

Max. Marks=50

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

II. Perform suitable chemical test and identify the given phytochemical C **10 marks**

III. Comment on D and E **2x5=10 marks**

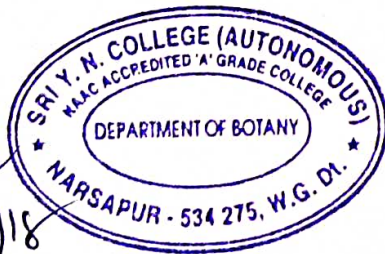
IV. Herbarium and submission of drugs **10 marks**

IV. Viva-Voce **5 marks**

V. Practical Record **5 marks**

-----  
Total = 50 marks

**APPROVED**



*[Signature]*  
CHAIRMAN 23/6/18  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
(NAAC ACCREDITED 'A' GRADE COLLEGE)  
NARSAPUR - 534 275

- 1 *[Signature]* 23/6/18
- 2 *[Signature]*
- 3 *[Signature]*
- 4
- 5 *[Signature]*
- 6 *[Signature]*
- 7 *[Signature]*





**SRI Y.N. COLLEGE (AUTONOMOUS)**  
Accredited by NAAC at 'A' Grade with a CGPA of 3.40  
Recognized by UGC as "College with Potential for Excellence"  
NARASAPUR – 534 275

**BOTANY CERTIFICATE COURSE**  
**ETHNOBOTANY- TRIBAL MEDICINAL PRACTICES**

---

**UNIT I**

**HEALTH PROMOTERS**

- Brain tonics
- Obesity
- Anti emetics
- Galactagogues

**BITES/STINGS**

- Dog bites
- Scorpion sting
- Snake bite

**UNIT II**

**SKIN PROBLEMS**

- Heel cracks
- Scabies
- Withlow
- Ring worm
- Swellings
- Pimples
- Filariasis
- Herpes

**DIGESTIVE PROBLEMS & FEVERS**

- Indigestion
- Helminthiasis
- Diarrhoea
- laxatives
- Fever
- Typhoid
- Malaria

**UNIT III**

**SPECIFIC AILMENTS**

- Burns
- Arthritis
- Cancer
- Mumps
- Goiter
- Heart ailment
- Chicken pox
- Dandruff/Lice
- Ear problems
- Premature hair fall & Greying
- Teeth infections

- Jaundice
- Cracked lips/ulcers in mouth
- Diabetes
- Anaemia
- Sun stroke
- Headache

## UNIT IV

### URINARY & SEXUAL PROBLEMS

- Kidney/ureter/gall bladder stones
- Dysuria
- Haematuria
- Urinary troubles
- Hydrocele
- Impotency
- Aphrodisiacs
- Spermatorrhoea
- HIV/AIDS
- Syphilis
- Gonorrhoea
- Irregular menstruation
- Contraceptives
- Anti sterility

### SUGGESTED READINGS:

1. Janapada vaidyam-Gayathri publication
2. Plants that heal-Dr. J C Kurian
3. Flowering plants of chittur dist-Dr. K Madhava chetty
4. Herbal home remedies-
5. Introduction to Ayurveda
6. Indian Medicinal Plants Vol I-V

APPROVED

1. T. R. Reddy

2. P. R. Reddy

3.

4. A. J. Reddy

5. N. Reddy

6.

7. G. Reddy



T. R. Reddy 6/7/17  
 CHAIRMAN  
 BOARD OF STUDIES  
 DEPARTMENT OF BOTANY  
 SRI Y. N. COLLEGE (AUTONOMOUS)  
 (NAAC ACCREDITED 'A' GRADE COLLEGE)  
 NARSAPUR - 534 275



SRI Y.N. COLLEGE (AUTONOMOUS) NARASAPUR - 534 275  
DEPARTMENT OF BOTANY  
MODEL QUESTION PAPER

Time: 2 1/2 Hr.

SECTION-A

Max. Marks: 55

Answer any TWO of the following

2x15=30M

1. Write about the Tribal medicinal practices for digestive problems?
2. Describe the Folk practices for urinary problems?
3. Describe the folk practices for any five specific ailments?

SECTION-B

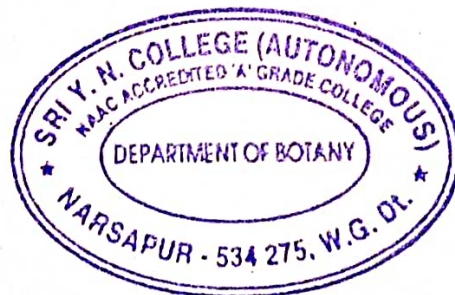
Answer any FIVE of the following

5x5=25M

1. Snake bite
2. Obesity
3. Pimples
4. Goiter
5. Malaria
6. Diabetes
7. HIV
8. Qualities of water

APPROVED

1. T. Rang
2. P. S. Rang
- 3.
4. A. J. Rang
5. N. Rang
- 6.
7. G. Rang



CHAIRMAN  
BOARD OF STUDIES  
DEPARTMENT OF BOTANY  
SRI Y.N. COLLEGE (AUTONOMOUS)  
AAC ACCREDITED 'A' GRADE COLLEGE  
NARASAPUR - 534 275