

# NAGARJUNA GOVERNMENT COLLEGE (Autonomous), NALGONDA

Re accredited by NAAC with 'A' Grade

DEPARTMENT OF BOTANY

BOARD OF STUDIES MEETING - 2016

CONSTITUTION OF BOARD OF STUDIES

The Board of studies in the Department of Botany has been constituted with the following members for the academic year 2016-17.

S.NO	CATEGORY	NAME & DESIDNATION	ADRESS/MAIL/PHONE
1.	Chairman, Board of Studies	<b>N. Siddulu</b> In-charge, Dept of Botany Nagarjuna Government college	Dept of Botany Nagarjuna Government college
2.	University Nominee	<b>Prof. S .Karunakar Reddy</b> Dept of Botany Osmania University	Dept of Botany University College of Science Osmania University
3.	Subject Experts	<b>Prof. H. Ramakrishna</b> Head, Dept of Botany Osmania University  <b>Prof. P. Manikya Reddy</b> Dept of Botany Osmania University	Dept of Botany University College of Science Osmania University  Dept of Botany University College of Science Osmania University
4.	Faculty members of Department	1. M. V. V. Satyaveni 2. A. Ramana Rao 3. R. Swapna 4. A. Raju(cont) 5. S. Shankar (cont) 6. G. Naveen Kumar (cont)	Dept of Botany Nagarjuana Government collge



In-Charge/Chairman BOS

DEPARTMENT OF BOTANY  
Nagarjuna Govt. College.  
NALGONDA.



Principal/Chairman Academic Council

From  
Prof S. Karunakar Reddy  
Subject Botany  
Osmania University  
Hyderabad.

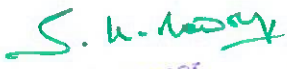
To,  
The Principal,  
N.G College,  
Nalgonda.

Sir,

In response to your letter dated \_\_\_\_\_, I am acknowledging my  
Consent to act as Hon'ble member/ Subject expert of BOS in your Dept of Botany  
Nagarjuna Govt College, Nalgonda.

Thanking you,

Yours Sincerely

  
Professor  
Department of Botany  
University College of Science  
G.U. Hyderabad-500 008

From  
Prof. H. Ramakrishna  
Subject Botany  
Osmania University  
Hyderabad.

To,  
The Principal,  
N.G College,  
Nalgonda.

Sir,

In response to your letter dated \_\_\_\_\_, I am acknowledging my  
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Nagarjuna Govt College, Nalgonda.

Thanking you,

Yours Sincerely

*H. Ramakrishna*  
Professor & Head  
Department of Botany  
Osmania University  
Hyderabad-500 007

From  
Prof. P. Manikya Reddy  
Subject Botany  
Osmania University  
Hyderabad.


To,  
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Thanking you,

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Professor  
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## DEPARTMENT OF BOTANY

BOARD OF STUDIES MEETING – 2016

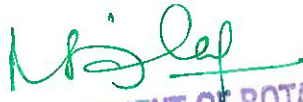
The Board of studies meeting of Botany Department is held today i.e on 25-10-2016 in the Department of Botany to discuss the following agenda and to formulate certain resolutions.

### Agenda:

1. To continue CBCS(Choice Based Credit System), introduced during the academic year 2014-15
2. To approve the syllabus of B.Sc I,II and III Year (CBCS) and Model papers
3. To conduct two internal assessments for 30 marks as twice in a semester (20 marks for written examination, 5 marks for assignment and 5 marks for student seminar) for the students admitted during 2014-15 and after
4. To conduct the semester end examinations (70 marks for CBCS, 40 marks for Non CBCS) and to conduct practical examinations at the end of the academic year for 50 marks (For both CBCS and Non CBCS)
5. To approve the list of Panel of examiners and paper setters


### Members Present:

1. Sri. N. Siddulu  
Chairman, Board of Studies  
Dept of Botany, Nagarjuna Government College, Nalgonda
2. Prof. S. Karunakar Reddy  
University Nominee, Dept of Botany  
Osmania University, Hyderabad
3. Prof. H. Ramakrishna  
Head, Dept of Botany  
Osmania University, Hyderabad
4. Prof. P. Manikya Reddy  
Dept of Botany  
Osmania University, Hyderabad

  
DEPARTMENT OF BOTANY  
Nagarjuna Govt. College.  
NALGONDA.

  
Professor  
Department of Botany  
University College of Science  
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# NAGARJUNA GOVERNMENT COLLEGE (Autonomous), NALGONDA

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## DEPARTMENT OF BOTANY

BOARD OF STUDIES MEETING - 2016

The Board of studies meeting of Botany Department is held today i.e on 25-10-2015 in the Department of Botany, discussed the agenda points and formulated the following resolutions.

1. The committee approved to continue CBCS (Choice Based Credit System), introduced during the academic year 2014-15.
2. Approved the syllabus of B. Sc I,II and III (CBCS) Year and Model papers
3. Approved to conduct two internal assessments for 30 marks twice in a semester (20 marks for written examination, 5 marks for assignment and 5 marks for student seminar) for the students admitted during 2014-15 and after
4. Approved to conduct the semester end examinations (70 marks for CBCS, 40 marks for Non CBCS) and to conduct practical examinations at the end of the academic year for 50 marks (For II and III year) at the end of semester for 25 marks (For I year).
5. Approved the list of Panel of examiners and paper setters

### Members Present:

1. Sri. N. Siddulu  
Chairman Board of Studies  
Dept of Botany, Nagarjuna Government College, Nalgonda

2. Prof. S. Karunakar Reddy  
University Nominee, Dept of Botany  
Osmania University, Hyderabad

Professor  
Department of Botany  
University College of Science  
O.U. Hyderabad-500 007.

3. Prof. H. Ramakrishna  
Head, Dept of Botany  
Osmania University, Hyderabad

Professor & Head  
Department of Botany  
Osmania University  
Hyderabad-500 007

4. Prof. P. Manikya Reddy  
Dept of Botany  
Osmania University, Hyderabad

Professor  
Department of Botany  
University College of Science  
O.U. Hyderabad-500 007.

6. Members from the Department:

1. M.V.V. Satyaveni
2. A. Raman Rao
3. R. Swapna (cont)
4. A. Raju (cont)
5. S. Shankar (cont)
6. G. Naveen Kumar (cont)

5.

# NAGARJUNA GOVERNMENT COLLEGE (Autonomous), NALGONDA

Re accredited by NAAC with 'A' Grade

DEPARTMENT OF BOTANY

BOARD OF STUDIES MEETING - 2016

Paper setters and Panel of examiners for the academic year 2016-17

S.No	Subject/ Paper	S.No	Name/Desigantion/Working address/mobile. No/email.ID	Residential Address
1.	I	1	<b>P.SureshBabu</b> , Asst. Prof of Botany GDC, Ibrahimpatnam. <b>Mobile No:9440394036</b> <b>Email ID:sureshbtm@gmail.com</b>	H.No: 4-21, East part phase-II Chaitanya nagar, B.N Reddy Nagar,Hyderabad.
2		2	<b>Dr. K. Srinivas Reddy</b> Asst. Prof of Botany KRR GDC, kodad. <b>Mobile No: 7396667598</b> <b>Email ID:kotativas@gmail.com</b>	Flat No.205, A-block, K.S.Enclave, Bhavani Nagar, Kodad.PIN-508206
3		3	<b>Dr. S.Anuradha</b> , Asst. Prof of Botany GDC, Kamareddy, NZMBD. <b>Mobile No:9985076989</b> <b>Email ID:</b> <b>sanginenianu@ rediffmail.com</b>	TRT Quarters-192, Sithaphalmandi, Secunderabad 500039.
4	II	1	<b>G. Odelu</b> Asst. Prof of Botany GDC, Jammikunta <b>Mobile No: 7893411128</b> <b>Email ID: odelugk.bot@gmail.com</b>	H. No. 2-85 Vil) EllanthaKunta Mdl) Jammikunta Dist) Karimnagar. PIN- 505122
5		2	<b>Dr.K. Srinivas Reddy</b> Asst. Prof of Botany KRR GDC, kodad. <b>Mobile No:7396667598</b> <b>Email ID: kotativas@gmail.com</b>	Flat No.205, A-block, K.S.Enclave, Bhavani Nagar, Kodad.PIN-508206
6		3	<b>P.V. Lakshmi Narayana</b> Asst. Prof of Botany KRR GDC, kodad. <b>Mobile No:9948159047</b> <b>Email ID:popupvln@gmail.com</b>	Flat No-104, Sai srisadan Apartment, Behind bank of Maharashtra NallalaBhavi Road, Suryapet 508213

  
Professor  
Department of Botany  
University College of Science  
O.U. Hyderabad-500 007.





7	III	1	<b>Dr. M. Satyanaryana Reddy</b> Asst. Prof of Botany S.P. College, Secunderabad. <b>Mobile No:9490190159</b> <b>Email ID:msnreddy.90@gmail.com</b>	H. No-1-9-295/14, Flat No-302, Sri Venkateshwara Apartment, Street No-15, Vidya Nagar, Hyderabad-500045
8		2	<b>Dr. S.Anuradha</b> Asst. Prof of Botany GDC, Kamareddy, NZMBD. <b>Mobile No: 9985076989</b> <b>Email ID:</b> <b>sanginenianu@rediffmail.com</b>	TRT Quarters-192, Sithaphalmandi, Secunderabad 500039.
9		3	<b>P.SureshBabu</b> , Asst. Prof of Botany GDC, Ibrahimpatnam. <b>Mobile No: 9440394036</b> <b>Email ID:sureshbtm@gmail.com</b>	H.No: 4-21, East part phase-II Chaitanya nagar, B.N Reddy Nagar,Hyderabad.
10	IV	1	<b>G. Odelu</b> Asst. Prof of Botany GDC, Jammikunta <b>Mobile No: 7893411128</b> <b>Email ID: odelugk.bot@gmail.com</b>	H. No. 2-85 Vil) EllanthaKunta Mdl) Jammikunta Dist) Karimnagar. PIN- 505122
11		2	<b>Dr.K. Srinivas Reddy</b> Asst. Prof of Botany KRR GDC, kodad. <b>Mobile No:7396667598</b> <b>Email ID: kotanivas@gmail.com</b>	Flat No-104, Sai srisadan Apartment, Behind bank of Maharashtra NallalaBhavi Road, Suryapet 508213
12		3	<b>P. Indra Reddy</b> Principal Siddartha Degree College, Nalgonda <b>Mobile No: 9912215345</b> <b>Email ID:</b> <b>indrareddy307@yahoo.com</b>	H.No:6-2-433/1 Srinagar Colony, Nalgonda. PIN-508001

*N. S. Reddy*

*N. S. Reddy*  
Professor  
Department of Botany  
University College of Science  
O.U. Hyderabad-500 007.

*Hameed*  
Professor & Head  
Department of Botany  
Osmania University  
Hyderabad-500 007

*S. K. Reddy*  
Professor  
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Telangana State Council of Higher Education, Govt. of Telangana  
*B.Sc CBCS Common Core Syllabus for All Universities in Telanganas (wef 2016-2017).*

PROPOSED SCHEME FOR B.Sc PROGRAMME  
 UNDER CHOICE BASED CREDIT SYSTEM

*FIRST YEAR SEMESTER-I*

Code	Course Title	Course Type	HPW	Crdeits
BS 104	Optional I	DSC I-A	4 T 2 P = 6	4 + 1 = 5

**Paper-I Microbial Diversity of Lower Plants**

*SEMESTER-II*

Code	Course Title	Course Type	HPW	Crdeits
BS 201	Environmental Studies	AECC-2	2	2
BS204	Optional-I	DSC-1B	4 T + 2P = 6	4 + 1 = 5

**Paper-II Bryophytes Pteridophytes, Gymnosperms and Palaeobotany**

*SECOND YEAR SEMESTER-III*

Code	Course Title	Course Type	HPW	Crdeits
BS304	Optional-I	DSC-IC	4 T + 2 P = 6	4 + 1 = 5

**Paper-III Taxonomy of Angiosperms and Medicinal Botany**

*SEMESTER-IV*

Code	Course Title	Course Type	HPW	Crdeits
BS404	Optional - I	DSC-ID	4 T + 2P = 6	4 + 1 = 5

**Plant Anatomy, Embryology and Palynology**

*THIRD YEAR SEMESTER-V*

Code	Course Title	Course Type	HPW	Crdeits
BS 503	Optional-I	DSC - IE	3 T + 2P = 5	3 + 1 = 4

**Paper-V: Cell Biology and Genetics**

BS 506	Optional I A/B	DSE-IE	3T + 2P = 5	3 + 1 = 4
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**Elective-I Ecology and Biodiversity / Elective II: Horticulture**

*SEMESTER-VI*

Code	Course Title	Course Type	HPW	Crdeits
BS 603	Optional-I	DSC - IF	3 T + 2P = 5	3 + 1 = 4

**Paper-VIII : Plant Physiology**

BS 606	Optional A/B/	DSE - IF	3 T + 2P = 5	3 + 1 = 4
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**Elective III Tissue Culture and Biotechnology / Elective-IV: Seed Technology**

AECC: Ability Enhancement Compulsory Course: DSC: Discipline Specific Course:  
 DSE : Discipline Specific Elective

*S.K. Moorthy*  
 Professor  
 Department of Botany  
 University College of Science  
 O.U. Hyderabad-500 007.

*N. S. Reddy*

**B.Sc (CBCS) Botany- I year**  
**Semester-I - Paper-I**  
**Microbial Diversity of Lower Plants**

**DSC - 1A (4 hrs./week)**

**Theory Syllabus**

**Credits- 4**  
**(60 hours)**

**UNIT - I**

1. Brief account of Archaeobacteria, Actinomycetes. (4h)
2. Cyanobacteria: General characters, cell structure, thallus organisation and their significance as biofertilizers with special reference to *Oscillatoria*, *Nostoc* and *Anabaena*. (6h)
3. Lichens: Structure and reproduction; ecological and economic importance. (5h)

**UNIT- II**

4. Viruses: Structure, replication and transmission; plant diseases caused by viruses and their control with reference to Tobacco Mosaic and Rice Tungro. (7h)
5. Bacteria: Structure, nutrition, reproduction and economic importance. An outline of plant diseases of important crop plants caused by bacteria and their control with reference to Angular leaf spot of cotton and Bacterial blight of Rice. (8h)
6. General account of Mycoplasma with reference to Little leaf of brinjal and Papaya leaf curl

**UNIT-III**

7. General characters, structure, reproduction and classification of algae (Fritsch) and thallus organization in algae. (3h)
8. Structure and reproduction of the following:  
Chlorophyceae- *Volvox*, *Oedogonium* and *Chara*. (5h)  
Phaeophyceae- *Ectocarpus* (2h)  
Rhodophyceae- *Polysiphonia*. (3h)
9. Economic importance of algae in Agriculture and Industry. (2h)

**UNIT-IV**

10. General characters and classification of fungi (Ainsworth). (3h)
11. Structure and reproduction of the following:  
(a) Mastigomycotina- *Albugo*  
(b) Zygomycotina- *Mucor*  
(c) Ascomycotina- *Saccharomyces* and *Penicillium*.  
(d) Basidiomycotina- *Puccinia*  
(e) Deuteromycotina- *Cercospora*. (10h)
12. Economic importance of fungi in relation to mycorrhizae and mushrooms. General account of mushroom cultivation (2h)

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Professor & Head  
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Osmania University  
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Professor  
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University College of Science  
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## References:

1. Alexopolous, J. and W. M. Charles. 1988. Introduction to Mycology. Wiley Eastern, New Delhi.
2. Mckane, L. and K. Judy. 1996. Microbiology – Essentials and Applications. McGraw Hill, New York.
3. Pandey, B. P. 2001. College Botany, Vol. I: Algae, Fungi, Lichens, Bacteria, Viruses, Plant Pathology, Industrial Microbiology and Bryophyta. S. Chand & Company Ltd, New Delhi.
4. Pandey, B. P. 2007. Botany for Degree Students: Diversity of Microbes, Cryptogams, Cell Biology and Genetics. S. Chand & Company Ltd, New Delhi.
5. Sambamurthy, A. V. S. S. 2006. A Textbook of Plant Pathology. I. K. International Pvt. Ltd., New Delhi.
6. Sambamurthy, A. V. S. S. 2006. A Textbook of Algae. I. K. International Pvt. Ltd., New Delhi.
7. Sharma, O. P. 1992. Textbook of Thallophyta. McGraw Hill Publishing Co., New Delhi.
8. Thakur, A. K. and S. K. Bassi. 2008. A Textbook of Botany: Diversity of Microbes and Cryptogams. S. Chand & Company Ltd, New Delhi.
9. Vashishta, B. R., A. K. Sinha and V. P. Singh. 2008. Botany for Degree Students: Algae. S. Chand & Company Ltd, New Delhi.
10. Vashishta, B. R. 1990. Botany for Degree Students: Fungi, S. Chand & Company Ltd, New Delhi.
11. Dutta A.C. 2016. Botany for Degree Students. Oxford University Press.

Alfady

Harun

Shahid

Najaf

NAGARJUNA GOVERNMENT COLLEGE (AUTONOMOUS) NALGONDA.

B.Sc (CBCS) Botany-I year  
Semester-I - Paper-I  
Microbial Diversity of Lower Plants  
Theory Model Question Paper

Time: 2 ½ Hrs.

Max Marks: 70

*Instructions to the candidates:* Draw neat labeled diagrams wherever necessary.

SECTION-A

(5 X 2 = 10)

Define or explain ALL of the following :

- 1.
- 2.
- 3.
- 4.
- 5.

SECTION-B

*(Instructions to the question PAPER SETTER: Set at least ONE question from EACH UNIT of the given syllabus).*

Write short answers for FOUR of the following:

(4 X 5 = 20)

- 6.
- 7.
- 8.
- 9.
- 10.
- 11.

SECTION-C

*(Instructions to the question PAPER SETTER: Set TWO questions from EACH UNIT of the given syllabus).*

Write detailed answers for ALL of the following:

(4 X 10 = 40)

UNIT - I

12. (a)

(OR)

(b)

UNIT - II

13. (a)

(OR)

(b)

UNIT - III

14. (a)

(OR)

(b)

UNIT - IV

15. (a)

(OR)

(b)









**B.Sc (CBCS) Botany-I year  
Semester-I - Paper-I  
Microbial Diversity of Lower Plants**

**Practical Syllabus**

**(45 hours)**

1. Study of viruses and bacteria using electron micrographs (photographs). (3h)
2. Gram staining of Bacteria. (3h)
3. Study of symptoms of plant diseases caused by viruses, bacteria, Mycoplasma and fungi:  
Viruses: Tobacco mosaic  
Bacteria: Angular leaf spot of cotton and Rice tungro.  
Mycoplasma: Little leaf of Brinjal and Leaf curl of papaya (3h)  
Fungi: White rust on Crucifers, Rust on wheat & Tikka disease of Groundnut. (6h)
4. Vegetative and reproductive structures of the following taxa:  
Algae: *Oscillatoria*, *Nostoc*, *Volvox*, *Oedogonium*, *Chara*, *Ectocarpus*  
and *Polysiphonia*. (6 h)  
Fungi: *Albugo*, *Mucor*, *Saccharomyces*, *Penicillium*, *Puccinia* and *Cercospora* (6h)
5. Section cutting of diseased material infected by Fungi and identification of pathogens as per theory syllabus. White rust of Crucifers, Rust on wheat & Tikka disease of Groundnut. (9h)
6. Lichens: Different types of thalli and their external morphology (3 h).
7. Examination of important microbial, fungal and algal products:  
Biofertilizers, protein capsules, antibiotics, mushrooms, Agar-agar etc. (3h)
8. Field visits to places of algal / microbial / fungal interest (e.g. Mushroom cultivation, water bodies). (3h)

*Adp*

*Harey*

*Sh. Arora*

**NAGARJUNA GOVERNMENT COLLEGE, NALGONDA**  
(AUTONOMOUS, RE-ACCREDITED BY NAAC WITH "A" GRADE)

**B.Sc (CBCS) Botany- I year**  
**Semester-I - Paper-I**  
**Microbial Diversity of Lower Plants**  
**Practical Model Paper**

Time : 2 1/2 hrs

Max. Marks: 50

1. Identify the given components 'A', 'B' & 'C' in the algal mixture .  
Describe with neat labeled diagrams & give reasons for the classifications. **3 X 5 = 15M**
2. Classify the given bacterial culture 'D' using Gram – staining technique. **8M**  
*Identification*
3. Take a thin transverse section of given diseased material 'E'.  
Identify & describe the symptoms caused by the pathogen. **10M**
4. Identify the given specimens 'F', 'G' & 'H' by giving reasons .  
(Fungal-1, Bacteria-1 & Viral-1) **3 X 2 = 6M**
5. Comment on the given slides 'I' & 'J' .  
( Algae-1 , Fungi-1 ) **2X 3 = 6M**
6. Record **5M**

*Maddu*

*Hirendra*

*Shreeji*

*Nigle*

**B.Sc (CBCS) Botany- I year**  
**Semester-II - Paper-II**  
**Bryophytes, Pteridophytes, Gymnosperms and Paleobotany**

**DSC-1B (4 hrs./week)**

**Theory Syllabus**

**Credits- 4**  
**(60 hours)**

**UNIT-I**

1. Bryophytes: General characters and classification. (3h)
2. Structure, reproduction, life cycle and systematic position of *Marchantia*, *Anthoceros* and *Polytrichum*. (Development stages are not required). (10h)
3. Evolution of Sporophyte in Bryophytes. (2h)

**UNIT-II**

4. Pteridophytes: General characters and classification (Sporne's) (3h)
5. Structure, reproduction, life cycle and systematic position of *Rhynia*, *Lycopodium*, *Equisetum* and *Marsilea*. (10h)
6. Stelar evolution, heterospory and seed habit in Pteridophytes. (2h)

**UNIT-III**

7. Gymnosperms: General characters, structure, reproduction and classification (Sporne's). (4h)
8. Distribution and economic importance of Gymnosperms. (3h)
9. Morphology of vegetative and reproductive parts, systematic position and life cycle of *Pinus* and *Gnetum*. (8 h)

**UNIT-IV.**

10. Palaeobotany: Introduction, Fossils and fossilization ; Importance of fossils. (8 h)
11. Geological time scale; (4 h)
12. Bennettitales: General account. (3 h)

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*[Handwritten signature]*



**References:**

1. Watson, E. V. 1974. The structure and life of Bryophytes, B. I. Publications, New Delhi.
2. Pandey, B. P. 2006. College Botany, Vol. II: Pteridophyta, Gymnosperms and Paleobotany. S. Chand & Company Ltd, New Delhi.
3. Sporne, K. R. 1965. Morphology of Gymnosperms. Hutchinson Co., Ltd., London.
4. Vashishta, P. C., A. K. Sinha and Anil Kumar. 2006. Botany - Pteridophyta (Vascular Cryptogams). S. Chand & Company Ltd, New Delhi.
5. Pandey, B. P. 2001. College Botany, Vol. I: Algae, Fungi, Lichens, Bacteria, Viruses, Plant Pathology, Industrial Microbiology and Bryophyta. S. Chand & Company Ltd, New Delhi.
6. Pandey, B. P. 2007. Botany for Degree Students: Diversity of Microbes, Cryptogams, Cell Biology and Genetics. S. Chand & Company Ltd, New Delhi.
7. Thakur, A. K. and S. K. Bassi. 2008. A Textbook of Botany: Diversity of Microbes and Cryptogams. S. Chand & Company Ltd, New Delhi.
8. Vashishta, B. R., A. K. Sinha and Adarsha Kumar. 2008. Botany for Degree Students: Bryophyta. S. Chand & Company Ltd, New Delhi.
9. Vashishta, P. C., A. K. Sinha and Anil Kumar. 2006. Botany for Degree Students: Gymnosperms. S. Chand & Company Ltd, New Delhi.
10. Dutta A.C. 2016. Botany for Degree Students. Oxford University Press.

*Handwritten signatures in green ink:*  
Nigley, Pandey, Havelly, S.K. Bassi

NAGARJUNA GOVERNMENT COLLEGE (AUTONOMOUS) NALGONDA.

B.Sc (CBCS) Botany-I year

Semester-II - Paper-II

Bryophytes, Pteridophytes, Gymnosperms and Paleobotany

Theory Model Question Paper

Time: 2 ½ Hrs.

Max Marks: 70

*Instructions to the candidates:* Draw neat labeled diagrams wherever necessary.

SECTION-A

(5 X 2 = 10)

Define or explain ALL of the following :

- 1.
- 2.
- 3.
- 4.
- 5.

SECTION-B

*(Instructions to the question PAPER SETTER: Set at least ONE question from EACH UNIT of the given syllabus).*

Write short answers for FOUR of the following:

(4 X 5 = 20)

- 6.
- 7.
- 8.
- 9.
- 10.
- 11.

SECTION-C

*(Instructions to the question PAPER SETTER: Set TWO questions from EACH UNIT of the given syllabus).*

Write detailed answers for ALL of the following:

(4 X 10 = 40)

UNIT - I

12. (a)

(OR)

(b)

UNIT - II

13. (a)

(OR)

(b)

UNIT - III

14. (a)

(OR)

(b)

UNIT - IV

15. (a)

(OR)

(b)

*Al Gady*

*Hawley*

*Stu Henry*

**B.Sc (CBCS) Botany- I year  
Semester-II - Paper-II  
Bryophytes, Pteridophytes, Gymnosperms and Paleobotany**

(45 hours)

**Practical Syllabus – 2016**

1. Study of Morphology (vegetative and reproductive structures) and anatomy of the following  
Bryophytes: *Marchantia*, *Anthoceros* and *Polytrichum*. (9 h)
2. Study of Morphology (vegetative and reproductive structures) and anatomy of the following  
Pteridophytes: *Lycopodium*, *Equisetum* and *Marsilea*. (9 h)
3. Study of Anatomical features of *Lycopodium* stem, *Equisetum* stem and *Marsilea* petiole &  
rhizome by preparing double stained permanent mounts. (12h)
4. Study of Morphology (vegetative and reproductive structures) of the following taxa:  
Gymnosperms: *Pinus* and *Gnetum*. (6 h)
5. Study of Anatomical features of *Pinus* needle and *Gnetum* stem by preparing double stained  
permanent mounts. (6h)
6. Fossil forms using permanent slides / photographs: *Rhynia* and *Cycadeoidea*. (3h)



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**NAGARJUNA GOVERNMENT COLLEGE, NALGONDA**  
(AUTONOMOUS, RE-ACCREDITED BY NAAC WITH "A" GRADE)

**B.Sc (CBCS) Botany- I year**  
**Semester-II - Paper-II**  
**Bryophytes, Pteridophytes, Gymnosperms and Paleobotany**  
**Practical Model Paper**

Time : 2 1/2 hrs

Max. Marks: 50

1. Prepare a double stained permanent mount of the given material ' A ' ( Pteridophyte )  
Draw diagram & give reasons for identification. 14M
2. Prepare a double stained permanent mount of the given material ' B ' ( Gymnosperms )  
Draw diagram & give reasons for identification. 15M
3. Identify the given specimens C, D , E & F ( Bryophyte – 2 , Pteridophyte – 1 &  
Gymnosperm – 1) 4 X 2 =8M
4. Identify the given slides G, H, I & J ( Bryophyte – 2 , Pteridophyte – 1  
& Gymnosperm – 1) 4 X 2 =8M
5. Record 5M

*Handwritten signatures in green ink:*  
M. S. Reddy      M. S. Reddy      Hanumanth      S. K. Desai

**U.G. I year Semester-I - (B.Sc/B.A./B.Com) CBCS**

**Environmental Studies**

**AECC-2 (2 hrs./week)**

**Credits – 2  
(30 hours)**

**UNIT - I : Ecosystem, Biodiversity & Natural Resources**

**(15 hrs.)**

1. Definition, Scope & Importance of Environmental Studies.
2. Structure of Ecosystem – Abiotic & Biotic components Producers, Consumers, Decomposers, Food chains, Food webs, Ecological pyramids)
3. Function of an Ecosystem :Energy flow in the Ecosystem ( Single channel energy flow model )
4. Definition of Biodiversity , Genetic,Species & Ecosystem diversity , Hot-spots of Biodiversity, Threats to Biodiversity , Conservation of Biodiversity (Insitu & Exsitu )
5. Renewable & Non – renewable resources, Brief account of Forest , Mineral & Energy (Solar Energy & Geothermal Energy) resources
6. Water Conservation , Rain water harvesting & Watershed management.

**UNIT – II: Environmental Pollution , Global Issues & Legislation**

**(15 hrs.)**

1. Causes, Effects & Control measures of Air Pollution, Water Pollution
2. Solid Waste Management
3. Global Warming & Ozone layer depletion.
4. Ill – effects of Fire- works
5. Disaster management – floods, earthquakes & cyclones
6. Environmental legislation :-  
(a) Wild life Protection Act (b) Forest Act (c) Water Act (d) Air Act
7. Human Rights
8. Women and Child welfare
9. Role of Information technology in environment and human health

**❖ Field Study:**

**(5 hours)**

- Pond Ecosystem
- Forest Ecosystem

**REFERENCES:**

- Environmental Studies - from crisis to cure – by R. Rajagopalan (Third edition) Oxford University Press.
- Text book of Environmental Studies for undergraduate courses (second edition) by Erach Bharucha
- A text book of Environmental Studies by Dr.D.K.Asthana and Dr. Meera Asthana

*Nijel*

*Ally*

*Hanuman*

*Stc Henry*

U.G. I year Semester – I- (B.Sc/B.A./B.Com) CBCS

AECC-2

**Environmental Studies**

Credits – 2

**THEORY MODEL PAPER**

**TIME: 1 ½ HOURS**

**MAX MARKS: 15**

**SECTION-A**

**Answer the following in short:**

**3x1=3marks**

1. Food chains
2. Genetic Diversity
3. Ill – effects of Fire- works

**SECTION-B**

**Answer the following essays:**

**2x6=12marks**

1 (a) Define Environmental Studies & write an essay on scope & importance of Environmental Studies

OR

(b) Write in detail about Energy resources.

2 (a) Write the Causes, Effects & Control measures of Air Pollution

OR

(b) Describe the role of Information technology in environment and human health

*Agdyp*

*Hanley*

*Sk. Masum*

# NAGARJUNA GOVERNMENT COLLEGE, NALGONDA

(AUTONOMOUS, RE-ACCREDITED BY NAAC WITH "A" GRADE)

## B.Sc II Year III SEMESTER SYLLABUS (2016-17)

Subject: **Botany**

Name of the Module: **Plant Anatomy and Embryology**

Nature of the Module: **Core**

Mode of the Learning: **Regular**

### UNIT – I

#### Plant Anatomy:

1. Introduction to Plant Anatomy  
*Meristems*: Types, histological organization of shoot and root apices and theories.
2. *Tissues and Tissue Systems*:  
(a) Simple tissues (b) Complex tissues (c) Special tissues (d) Ground tissue system  
(e) Vascular tissue system and epidermal tissue system.
3. *Leaf*: Ontogeny, diversity of internal structure; stomata and epidermal out growths.

### UNIT – II

4. Internal structure of stem and root, formation and functions of vascular cambium. Normal secondary growth of dicot stem.
5. Anomalous secondary growth of the following stems and root.  
(a) *Achyranthes* (b) *Boerhavia* (c) *Dracaena* (d) *Bignonia* (e) *Beta* root.
6. Wood Anatomy:- General account study of local timbers  
(a) Teak (*Tectona grandis*)  
(b) Rose wood (*Dalbergia latifolia*)  
(c) Red sanders (*Pterocarpus santalinus*)  
(d) Nallamaddi (*Terminalia tomentosa*)  
(e) Yegisa (*Pterocarpus marsupium*)  
(f) Neem (*Azadirachta indica*)

### UNIT – III

#### Embryology:

7. (a) Introduction: History and importance of Embryology.  
(b) Anther structure, Microsporogenesis and development of male gametophyte.
8. (c) Ovule structure and types; Megasporogenesis; types and development of female gametophyte.

### UNIT- IV

9. Pollination - Types; Pollen - pistil interaction. Fertilization.
10. Endosperm - Development and types. Embryo - development and types; Polyembryony and Apomixis - an outline.
11. Palynology:- Pollen morphology (a) Hibiscus (b) Acacia (c) Grass, NPC System.

*N. S. Reddy*

*Reddy*

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NAGARJUNA GOVERNMENT COLLEGE (AUTONOMOUS) NALGONDA.

MODEL QUESTION PAPER

B. Sc II Yr, III Semester-End examination

**BOTANY (Paper-III)**

(Plant Anatomy and Embryology)

**Time: 2 ½ Hrs.**

**Max Marks: 70**

*Instructions to the candidates:* Draw neat labeled diagrams wherever necessary.

**SECTION-A**

**(5 X 2 = 10)**

Define or explain ALL of the following :

1. Annual growth rings
2. Hydathodes
3. Orthotropous ovules
4. Hypostase
5. Endothelium

**SECTION-B**

*(Instructions to the question PAPER SETTER: Set at least ONE question from EACH UNIT of the given syllabus).*

Write short answers for **FOUR** of the following:

**(4 X 5 = 20)**

6. Tunica carpus theory
7. Collenchyma
8. Types of stomata
9. Helobial endosperm
10. Microsporogenesis
11. Pollination and its types

**SECTION-C**

*(Instructions to the question PAPER SETTER: Set TWO questions from EACH UNIT of the given syllabus).*

Write detailed answers for **ALL** of the following:

**(4 X 10 = 40)**

**UNIT - I**

12. (a) Write an essay on meristems

(OR)

- (b) Describe complex tissue in angiosperms

**UNIT - II**

13. (a) Describe the anomalous secondary growth of *Achyranthus*

(OR)

- (b) Explain the wood anatomy of Teak and Rose wood

**UNIT - III**

14. (a) Explain the T.S of anther

(OR)

- (b) Tetra sporic development in embryo sac

**UNIT - IV**

15. (a) Explain the fertilization process in angiosperms

(OR)

- (b) Describe dicot embryo development

*N. J. Reddy*

*N. J. Reddy*

*H. K. Reddy*

*H. K. Reddy*

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# NAGARJUNA GOVERNMENT COLLEGE, NALGONDA

(AUTONOMOUS, RE-ACCREDITED BY NAAC WITH "A" GRADE)

## B.Sc II Year IV SEMESTER SYLLABUS (2016-17)

Subject: **Botany**

Name of the Module: **Taxonomy and Medicinal Botany**

Nature of the Module: **Core**

Mode of the Learning: **Regular**

### UNIT – I

#### Taxonomy:

1. Introduction: Principles of plant systematics, Systematics vs Taxonomy, Types of classification: Artificial, Natural and Phylogenetic.
2. Systems of classification: Salient features and comparative account of Bentham & Hooker and Engler & Prantle. An introduction to Angiosperm Phylogeny Group (APG).
3. Current concepts in Angiosperm Taxonomy: Embryology in relation to taxonomy, Cytotaxonomy, Chemotaxonomy and Numerical Taxonomy.

### UNIT- II

4. Nomenclature and Taxonomic resources: An introduction to ICBN, Vienna code - a brief account. Herbarium: Concept, techniques and applications.
5. Systematic study and economic importance of plants belonging to the following families.

(a) Annonaceae	(b) Malvaceae	(c) Rutaceae
Fabaceae (	(d) Faboideae/papilionoideae,	(e) Caesalpinioideae, (f) Mimosoideae,
(g) Cucurbitaceae	(h) Apiaceae	(i) Asteraceae
(j) Asclepiadaceae	(k) Lamiaceae	(l) Amaranthaceae
(m) Euphorbiaceae	(n) Orchidaceae	(o) Poaceae

### UNIT – III

#### Medicinal Botany:

7. Ethnomedicine: Scope, inter disciplinary nature, distinction of ethnomedicine from folklore medicine. Outlines of Ayurveda, Siddha, Unani and Homeopathic system of traditional medicine. Role of AYUSH, NMPB, CIMAP and CDRI.
8. Plants in primary health care: Common medicinal plants – Tippateega (*Tinospora cordifolia*), tulasi (*Oscimum sanctum*), pippallu (*Piper longum*), Karaka (*Terminalia chebula*), Kalabanda (*Aloe vera*), Turmeric (*Curcuma longa*).

### UNIT-IV

9. Traditional medicine vs Modern medicine: Study of select plant examples used in traditional medicine as resource (active principles, structure, usage and pharmacological action) of modern medicine: Aswagandha (*Withania somnifera*), Sarpagandha (*Rauwolfia serpentina*), Nela usiri (*Phyllanthus amarus*), Amla (*Phyllanthus emblicu*) and Brahmi (*Bacopa monnieri*).
10. Pharmacognosy:- Introduction and scope Adulteration of Plant crude drugs and methods of identification – Some Examples. Indian pharmacopoeia.
11. Plant crude drugs: Types, Methods of collection, processing and storage practices, evaluation of crude drugs.

*Maddi*

*Hanoo*

*Subashy*

NAGARJUNA GOVERNMENT COLLEGE (AUTONOMOUS) NALGONDA.

MODEL QUESTION PAPER

B. Sc II Yr, IV Semester-End examination

BOTANY (Paper-IV)

(Taxonomy and Medicinal Botany)

Time: 2 ½ Hrs.

Max Marks: 70

*Instructions to the candidates:* Draw neat labeled diagrams wherever necessary.

SECTION-A

(5 X 2 = 10)

Define or explain ALL of the following :

1. ICBN
2. Artificial classification
3. AYUSH
4. Ethnomedicine
5. Ray floret floral formula

SECTION-B

*(Instructions to the question PAPER SETTER: Set at least ONE question from EACH UNIT of the given syllabus).*

Write short answers for FOUR of the following:

(4 X 5 = 20)

6. APG
7. Principles of plant systematics
8. Asclepiadaceae flower
9. Panchamahabutha's
10. Tulasi
11. Indian pharmacopeia

SECTION-C

*(Instructions to the question PAPER SETTER: Set TWO questions from EACH UNIT of the given syllabus).*

Write detailed answers for ALL of the following:

(4 X 10 = 40)

UNIT - I

12. (a) Explain embryology in relation to taxonomy

(OR)

- (b) Compare Engler & Prantle classification with Bentham & Hooker's Classification

UNIT - II

13. (a) Family characters of Euphorbiaceae

(OR)

- (b) Explain the family characters of Poaceae

UNIT - III

14. (a) Describe the various traditional systems of medicine

(OR)


- (b) Give general account of Tippateega Karaka

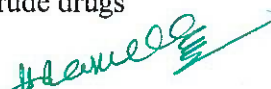
UNIT - IV

15. (a) Describe active principles and pharmacological action of any two medicinal plants

(OR)

- (b) Explain about adulteration of plant crude drugs

  
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**NAGARJUNA GOVERNMENT COLLEGE, NALGONDA**  
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Model Question Paper for B.Sc II Year Practical Examination

**SUBJECT: - BOTANY**

(Anatomy, Embryology, Taxonomy and Medicinal Botany)

**Time: 3 Hrs.**

**Max.Marks:50**

- I. Section cutting and preparation of permanent slide by double staining method. (A) 1 x 8 = 08
- II. Prepare the temporary mount of epidermal peel from given leaf material and identify stomatal types. (B) 1 x 6 = 06
- III. Pollen viability test (C) 1 x 6 = 06
- IV. Description of vegetative and floral characters of given plant twigs 'D' and 'E' with floral formula and floral diagrams. 2 x 8 = 16
- V. Comment on spotters (F, G, H, I) 4 x 2 = 08
- VI. Record and Herbarium 4 + 2 = 06

\* \* \* \* \*

*N. J. Reddy*

*N. J. Reddy*

*H. K. Reddy*

*S. K. Reddy*

**NAGARJUNA GOVERNMENT COLLEGE, NALGONDA**

(AUTONOMOUS, RE-ACCREDITED BY NAAC WITH "A" GRADE)

**B.Sc III Year V SEMESTER SYLLABUS (2016-17)**

Subject: **Botany**

Name of the Module: **Cell Biology and Genetics**

Nature of the Module: **Core**

Mode of the Learning: **Regular**

Paper - V

**UNIT - I**

**CELL BIOLOGY:**

1. **Plant cell envelops:** Ultra structure of cell wall, molecular organization of cell membranes.
2. **Nucleus:** Ultra structure, nucleic acids, structure and replication of DNA, types and functions of RNA.

**UNIT - II**

3. **Chromosomes:** Morphology, organization of DNA in a chromosome, euchromatin and heterochromatin, Karyotype.
4. **Special types of Chromosomes:** Lampbrush, Polytene and B-Chromosomes.
5. **Cell division:** cell cycle and its regulation; mitosis, meiosis and their significance.

**UNIT - III**

**GENETICS:**

6. **Mendelism:** Laws of inheritance, genetic interactions – Epistasis, complementary, supplementary and inhibitory genes.
7. **Linkage and crossing over:** A brief account, construction of genetic maps-2 point and 3 point test cross data.

**UNIT - IV**

8. **Mutations:** Chromosomal aberrations-structural and numerical changes; Gene mutations.
9. **Gene Expression:** Organization of gene, transcription, translation, mechanism and regulation of gene expression in prokaryotes (Lac-operon and Trp-operons).
10. **Extra nuclear genome:** Mitochondrial and plastid DNA, plasmids.

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**NAGARJUNA GOVERNMENT COLLEGE (AUTONOMOUS) NALGONDA.**

**MODEL QUESTION PAPER**

B. Sc III Yr, VI Semester-End examination

**BOTANY (Paper-V)**

**(Cell biology and Genetics)**

**Time: 2 ½ Hrs.**

**Max Marks: 70**

*Instructions to the candidates:* Draw neat labeled diagrams wherever necessary.

**SECTION-A**

**(5 X 2 = 10)**

Define or explain ALL of the following :

1. z-DNA
2. Karyotype
3. Nucleolar Organizer Region
4. Test cross
5. Cp-DNA

**SECTION-B**

*(Instructions to the question PAPER SETTER: Set at least ONE question from EACH UNIT of the given syllabus).*

Write short answers for FOUR of the following:

**(4 X 5 = 20)**

6. Fluid mosaic model
7. Eucromatin & Hetrochromatin
8. m-RNA
9. Two point test cross
10. Gene mutations
11. Transcription

**SECTION-C**

*(Instructions to the question PAPER SETTER: Set TWO questions from EACH UNIT of the given syllabus).*

Write detailed answers for ALL of the following:

**(4 X 10 = 40)**

**UNIT - I**

12. (a) Describe the cell wall structure

**(OR)**

- (b) Explain structure and replication of DNA

**UNIT - II**

13. (a) Describe the special types of chromosomes

**(OR)**

- (b) Write about Mitosis and its significance

**UNIT - III**

14. (a) Describe gene interactions and write any four types of interactions

**(OR)**

- (b) Explain the mechanisam of Linkage and its significance

**UNIT - IV**

15. (a) Write an essay on chromosomal mutations

**(OR)**

- (b) Describe the mechanisam of Lac operon in prokaryotes

*M. Adarsh*

*Shreyas*

*Shreyas*

# NAGARJUNA GOVERNMENT COLLEGE, NALGONDA

(AUTONOMOUS, RE-ACCREDITED BY NAAC WITH "A" GRADE)

B.Sc III Year V SEMESTER SYLLABUS (2016-17)

Subject: **Botany**

Name of the Module: **Tissue culture, Biotechnology, Seed Technology and Horticulture**

Nature of the Module: **Elective-I**

Mode of the Learning: **Regular**

Paper - VI

## UNIT - I

### **Tissue Culture & Biotechnology**

1. **Tissue Culture:** Introduction, sterilization procedures, culture media composition and preparation; explants.
2. **Callus Cultures:** Cell and protoplast culture, somatic hybrids and cybrids.
3. **Applications of Tissue Culture:** Production of pathogen free plants and somaclonal variants, production of stress resistance plants, secondary metabolites and synthetic seeds.

## UNIT - II

4. **Biotechnology:** Introduction, history and scope.
5. **r DNA Technology:** Vectors and gene cloning and transgenic plants.

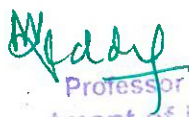
## UNIT - III

### **Seed Technology and Horticulture**

6. **Seed:** Structure and types. Seed dormancy, causes and methods of breaking dormancy.
7. **Seed Storage:** Seed banks, factors affecting seed viability, genetic erosion, seed production technology; seed testing and certification.
8. **Horticulture Technology:** Introduction, cultivation of ornamental and vegetable crops, Bonsai and landscaping.

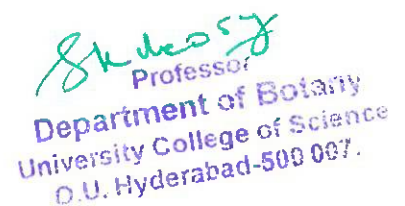
## UNIT - IV

9. **Floriculture:** Introduction. Importance of green house, polyhouse, mist chamber, shade nets; Micro irrigation systems. Floriculture potential and its trade in India
10. **Vegetative propagation of plants:** Stem, root and leaf cutting. Layering and Bud grafting, role of plant growth regulators in horticulture.

  
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**NAGARJUNA GOVERNMENT COLLEGE (AUTONOMOUS) NALGONDA.**

**MODEL QUESTION PAPER**

B. Sc III Yr, V Semester-End examination

**BOTANY (Paper-VI)**

**(Tissue culture, Biotechnology, Seed Technology and Horticulture)**

**Time: 2 ½ Hrs.**

**Max Marks: 70**

*Instructions to the candidates:* Draw neat labeled diagrams wherever necessary.

**SECTION-A**

**(5 X 2 = 10)**

Define or explain ALL of the following :

1. Explant
2. PEG (Poly Ethylene Glycol)
3. Plasmid
4. Seed Bank
5. Layering

**SECTION-B**

*(Instructions to the question PAPER SETTER: Set at least ONE question from EACH UNIT of the given syllabus).*

Write short answers for FOUR of the following:

**(4 X 5 = 20)**

6. Single cell culture
7. Transgenic plants
8. Genetic Erosion
9. Landscaping
10. Poly house
11. Seed certification

**SECTION-C**

*(Instructions to the question PAPER SETTER: Set TWO questions from EACH UNIT of the given syllabus).*

Write detailed answers for ALL of the following:

**(4 X 10 = 40)**

**UNIT - I**

12. (a) Write an essay on protoplast culture

**(OR)**

(b) Write in detail about the various applications of plant tissue culture technology

**UNIT - II**

13. (a) Write in detail about agricultural, medicinal and industrial biotechnology

**(OR)**

(b) Write an essay on r-DNA technology

**UNIT - III**

14. (a) Describe in detail about the reasons for seed dormancy & methods used to break dormancy

**(OR)**

(b) Write an essay on the cultivation of vegetable crops

**UNIT - IV**

15. (a) Describe the different types of micro irrigation systems & their utility

**(OR)**

(b) Describe in detail about the various types of cuttings employed in vegetative propagation

*Nijel*

*Madh*

*Heem*

*Shankar*

# NAGARJUNA GOVERNMENT COLLEGE, NALGONDA

(AUTONOMOUS, RE-ACCREDITED BY NAAC WITH "A" GRADE)

B.Sc III Year VI SEMESTER SYLLABUS (2016-17)

Subject: **Botany**

Name of the Module: **Ecology, Biodiversity and Conservation**

Nature of the Module: **Core**

Mode of the Learning: **Regular**

Paper - VII

## UNIT - I

### **Ecology:**

1. **Ecosystem:** Concept and components of ecosystem, energy flow, food chains, food webs, ecological pyramids, biogeochemical cycles- Carbon, Nitrogen and Phosphorus.
2. **Plants and Environment:** Ecological factors – climatic (light and temperature), edaphic and biotic, ecological adaptations of plants.
3. **Population Ecology:** Natality, Mortality, Growth curves, ecotypes, ecads.

## UNIT - II

4. **Community Ecology:** Frequency, density, cover, life forms, biological spectrum, ecological succession (Hydrosere, Xerosere).
5. **Production Ecology:** Concepts of productivity, GPP, NPP, CR (Community respiration) and secondary production, P/R ratio and ecosystems.

## UNIT - III

### **Biodiversity and Conservation:**

6. **Biodiversity:** Concepts, convention on biodiversity – Earth summit. Types of biodiversity.
7. Levels, threats and value of biodiversity.
8. **Hot spots of India** – Endemism, North Eastern Himalayas, Western Ghats.

## UNIT - IV

9. **Agro-biodiversity:** Vavilov centers of crop plants.
10. Principles of conservation: IUCN threat-categories, RED data book - threatened & endangered plants of India. Role of organizations in the conservation of Biodiversity - IUCN, UNEP, WWF, NBPGR. .

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**NAGARJUNA GOVERNMENT COLLEGE (AUTONOMOUS) NALGONDA.**

**MODEL QUESTION PAPER**

B. Sc III Yr, VI Semester-End examination

**BOTANY (Paper-VI) VII**

(Ecology, Biodiversity & Conservation)

**Time: 2 ½ Hrs.**

**Max Marks: 70**

*Instructions to the candidates:* Draw neat labeled diagrams wherever necessary.

**SECTION-A**

**(5 X 2 = 10)**

Define or explain ALL of the following :

1. Food web
2. Mortality
3. GPP
4. Endemism
5. RED data book

**SECTION-B**

*(Instructions to the question PAPER SETTER: Set at least ONE question from EACH UNIT of the given syllabus).*

Write short answers for FOUR of the following:

**(4 X 5 = 20)**

6. Food chain
7. P/R ratio
8. Biological spectrum
9. Earth summit
10. Types of Biodiversity
11. WWF

**SECTION-C**

*(Instructions to the question PAPER SETTER: Set TWO questions from EACH UNIT of the given syllabus).*

Write detailed answers for ALL of the following:

**(4 X 10 = 40)**

**UNIT - I**

12. (a) Describe the various kinds of Ecological pyramids

**(OR)**

- (b) Write an essay about Biogeo chemical cycle

**UNIT - II**

13. (a) Describe the ecological succession of Hydrocere

**(OR)**

- (b) Explain the Raunkier life forms

**UNIT - III**

14. (a) Describe the Biodiversity and levels, threats, and value of bio diversity

**(OR)**

- (b) Write a note on Hot spots of india

**UNIT - IV**

15. (a) Describe the vavilov centers of crop plants

**(OR)**

- (b) Role of organization in the conservation of Biodiversity IUCN, UNEP, NBPGR

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# NAGARJUNA GOVERNMENT COLLEGE, NALGONDA

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## BOTANY

B.Sc III Year Practical Syllabus for V & VI Semester

Academic Year 2016-17

Paper – III (V & VI)

**(Cell Biology, Genetics & Ecology)**

1. Demonstration of cytochemical methods: Fixation of plant material and nuclear staining.
2. Study of various stages of mitosis using cytological preparation of Onion root tips.
3. Study of various stages of meiosis using cytological preparation of Onion root flower buds.
4. Karyotype study using cytological preparation of dividing root tip cells of Onion/photographs/permanent slides.
5. Solving genetic problems related to monohybrid, dihybrid ratio and interaction of genes (minimum of six problems in each topic)
6. Construction of linkage maps; two point test cross.
7. Knowledge of ecological instruments: Working principles and applications of Hygrometer, rain gauge, anemometer, altimeter, light meter, wet and dry bulb thermometer (with the help of Equipment/diagrams/photographs).
8. Determination of soil texture (composition of clay, sand silt etc.) and pH.
9. Study of morphological and anatomical characteristics of plant communities using locally available plant species; Hydrophytes (Eichhornia, Hydrilla, Pistia, Nymphaea, Vallisneria), Xerophytes (Asparagus, Opuntia, Euphorbia antiquorum), Halophytes (Rhizophora, Avicennia).
10. Detailed study on macro flora of a local fresh water body.
11. Estimation of carbonates and bicarbonates in the given sample.
12. Minimum of two field visits to local areas of ecological/Conservation of biodiversity importance (Sacred grove/Reserved forest/Botanical garden/Zoo Park/Lake etc).

*Maddy*

*Blame*

*Shame*

# NAGARJUNA GOVERNMENT COLLEGE, NALGONDA

(AUTONOMOUS, RE-ACCREDITED BY NAAC WITH "A" GRADE)

## BOTANY

B.Sc III Year Practical Syllabus for VI Semester

Academic Year 2016-17

**Paper – IV (VI & VIII)**

**(Physiology, Tissue Culture, Biotechnology, Seed Technology and Horticulture)**

1. Determination of osmotic potential of vacuolar sap by plasmolytic method using leaves of Rheo/Tradescantia.
2. Determination of rate of transpiration using cobalt chloride method.
3. Determination of stomatal frequency using leaf epidermal peelings/impressions.
4. Determination of catalase activity using potato tubers by titration method.
5. Separation of chloroplast pigments using paper chromatography technique.
6. Estimation of protein by biuret method.
7. Isolation and estimation of DNA.
8. Testing of seed viability using 2,3,5-triphenyl tetrazolium chloride (TTC).
9. Demonstration of seed dressing using fungicide to control diseases.
10. Demonstration of seed dressing using biofertilizer (Rhizobium) to enrich nutrient supply.
11. Study on tools/equipment used in horticulture: Rake, hoe, spade, trowel, digger, pick-axe, shade net, glass house and mist chamber.
12. Demonstration of vegetative plant propagation: Rooting of cuttings – Leaf and Stem; layering; stem, bud and wedge grafting.
13. Study on the application of plant growth regulator (IBA) for rooting of cuttings using ornamental plants.
14. Knowledge of instruments and facilities used in plant tissue culture using equipment/photographs. Preparation of plant tissue culture medium.
15. Demonstration of micro propagation using explants like axillary buds and shoot meristems (inoculation of explants).
16. Study of biotechnology products: Samples of antibiotics, vaccines, biofertilizers, single cell protein, cosmetics; photographs of transgenic plants, multiple shoots and Artificial/synthetic seeds.
17. Study visits to places of horticultural and biotechnological interest Commercial nurseries/Botanical gardens; Biotechnology R&D laboratories/Industries.

*N. J. Jeyaraj* *M. J. Jeyaraj* *H. M. Malle* *S. K. Kesava*