

NALANDA OPEN UNIVERSITY
M.Sc. Botany, Part-I
PAPER-I
(Biodiversity of Plant and Diversity of Algae)
Annual Examination, 2017

Time : 3 Hours.

Full Marks : 80

*Answer Five Questions in all, selecting at least Two Questions from each group.
All questions carry equal marks.*

GROUP 'A'

1. What are different values of biodiversity ?
2. Give an account of different types of biodiversity ?
3. What are different types of biochemical cycle. Describe any one of them in detail.
4. Write explanatory notes on any Two of the following :-
 - (a) Ecological pyramid
 - (b) Productivity
 - (c) Mutualism
5. Write short notes on any **Two** of the following :-
 - (a) conservation of biodiversity
 - (b) Threatened categories
 - (c) Genetic biodiversity

GROUP 'B'

6. Describe characteristic feature of cyanophyceae.
7. Give an account of range of vegetative structure in green algae.
8. Describe sexual reproduction in phaeophyceae.
9. What are the characteristic feature of Rhodophyceae ?
10. Write short notes on any **Two** of the following :-
 - (a) Symbiotic algae and its significance
 - (b) Agar-Agar its utilization and properties
 - (c) Algal bloom and its significance
 - (d) Akinetes & Hypnospores

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Examination Programme, 2017
M.Sc. Botany, Part-I

Date	Papers	Time	Examination Centre
12.05.2017	Paper-I	8.00 AM to 11.00 AM	Nalanda Open University, Patna
16.05.2017	Paper-II	8.00 AM to 11.00 AM	Nalanda Open University, Patna
18.05.2017	Paper-III	8.00 AM to 11.00 AM	Nalanda Open University, Patna
20.05.2017	Paper-IV	8.00 AM to 11.00 AM	Nalanda Open University, Patna
22.05.2017	Paper-V	8.00 AM to 11.00 AM	Nalanda Open University, Patna
24.05.2017	Paper-VI	8.00 AM to 11.00 AM	Nalanda Open University, Patna
26.05.2017	Paper-VII	8.00 AM to 11.00 AM	Nalanda Open University, Patna
29.05.2017	Paper-VIII	8.00 AM to 11.00 AM	Nalanda Open University, Patna

NALANDA OPEN UNIVERSITY

**M.Sc. Botany, Part-I
PAPER-II**

(Microbiology and Diversity of Fungi)

Annual Examination, 2017

Time : 3 Hours.

Full Marks : 80

*Answer Five Questions in all, selecting at least Two Questions from each group.
All questions carry equal marks.*

GROUP 'A'

1. Give an account of structure and reproduction of Bacteriophage.
2. What is a Plasmid ? Mention its significance in recombinant DNA research.
3. What is a culture media ? What are the types of culture media. Describe method of preparation of a synthetic culture media.
4. Write an essay on Industrial importance of Bacteria.
5. Write short notes on any **Two** of the following :-
 - (a) Contributions of Louis Pasteur
 - (b) Role of Bacteria in Nitrogen fixation
 - (c) Bacterial reproduction
 - (d) Characteristics of Mycoplasma

GROUP 'B'

6. Write methods of cultivation of Mushroom.
7. Describe role of Fungi in Industries.
8. Write in detail regarding method of sexual reproduction in Fungi.
9. Describe life cycle of Fungus Puccinia graminis
10. Write short notes on any **Two** of the following :-
 - (a) Parasexuality and its significance
 - (b) Mycotoxins
 - (c) Sex hormone in Fungi

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<p>For Practical Counselling Class & Practical Examination Programme Please See on Back Page.</p>
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NALANDA OPEN UNIVERSITY

M.Sc. Botany, Part-I

PAPER–III

(Plant Pathology)

Annual Examination, 2017

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions. All questions carry equal marks.

- Describe role of enzymes in disease development.
- Describe various kinds of disease symptoms caused by fungal pathogens in the host plants.
- Describe in detail pre and post structural defense in the host plant.
- What do you mean by biological control of plant disease ? Give an account of the control of soil borne plant diseases by the application of microbes.
- Give a brief account of systematic fungicides.
- Give an account of organic fungicides.
- Describe symptoms, etiology, disease cycle and control of Late blight of potato.
- Describe symptoms, etiology and control of little leaf of brinjal.
- Describe symptoms, etiology and control of citrus canker.
- Write short notes on any **Two** of the following :—
 - Bordeaux mixture
 - Disease escape
 - Disease resistance
 - Soil amendment

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M.Sc. BOTANY, PART–I

Practical Counselling Classes and Practical Examination Programme, 2017

Venue : Botany Lab, 1st Floor, Biscomaun Tower, Patna

Practical Counselling Class Programme

Enrollment No.	Batch	Date	Paper	Date	Paper	Time (Daily)
All Old Students	B1	30.05.2017	I to IV	31.05.2017	V to VIII	9.00 AM to 3.00 PM
160260001 to 160260055	B2	01.06.2017	I to IV	02.06.2017	V to VIII	9.00 AM to 3.00 PM
160260056 to 160260110	B3	08.06.2017	I to IV	09.06.2017	V to VIII	9.00 AM to 3.00 PM
160260111 to 160260165	B4	10.06.2017	I to IV	11.06.2017	V to VIII	9.00 AM to 3.00 PM
160260166 to 160260220	B5	16.06.2017	I to IV	17.06.2017	V to VIII	9.00 AM to 3.00 PM
160260221 to 160260269	B6	18.06.2017	I to IV	19.06.2017	V to VIII	9.00 AM to 3.00 PM

Practical Examination Programme

Date	Time							
	8.00 AM to 10.00 AM		10.30 AM to 12.30 PM		1.30 PM to 3.30 PM		4.00 PM to 6.00 PM	
	Batch	Paper	Batch	Paper	Batch	Paper	Batch	Paper
03.06.2017	B1	I	B1	II	B2	I	B2	II
05.06.2017	B1	III	B1	IV	B2	III	B2	IV
06.06.2017	B1	V	B1	VI	B2	V	B2	VI
07.06.2017	B1	VII	B1	VIII	B2	VII	B2	VIII
12.06.2017	B3	I	B3	II	B4	I	B4	II
13.06.2017	B3	III	B3	IV	B4	III	B4	IV
14.06.2017	B3	V	B3	VI	B4	V	B4	VI
15.06.2017	B3	VII	B3	VIII	B4	VII	B4	VIII
20.06.2017	B5	I	B5	II	B6	I	B6	II
21.06.2017	B5	III	B5	IV	B6	III	B6	IV
22.06.2017	B5	V	B5	VI	B6	V	B6	VI
23.06.2017	B5	VII	B5	VIII	B6	VII	B6	VIII

NALANDA OPEN UNIVERSITY

M.Sc. Botany, Part-I PAPER-IV

(Biology and diversity of Bryophyta of pteridophyta)

Annual Examination, 2017

Time : 3 Hours.

Full Marks : 80

Answer Five Questions in all, selecting at least Two Questions from each group.

All questions carry equal marks.

GROUP 'A'

- Describe general characters of Bryophytes.
- Describe salient features of order Marchantiales and its affinities.
- Give an account of structure and reproduction of *Takakia*.
- Write short notes on any **Two** of the following :-
 (a) Sporophyte of *Riccia* (b) Gemma cup of *Marchantia*
 (c) Moss protonema (d) Columella (e) Elaters
- Describe the sporophyte of *Anthoceros* and highlight its role in evolution of land plants.

GROUP 'B'

- Describe the sporophyte of *selaginella* and mention its significance.
- Describe stele found in Pteridophytes.
- Describe the structure and reproduction in *Psilotum*.
- Describe the structure and reproduction in a fossil genera *Rhynia*. Highlight its affinity .
- Write short notes on any **Two** of the following :-
 (a) Spore producing organ of *Equisetum* (b) *Cyathea*
 (c) Sorus and its significance (d) Sporocarp of *Marsilea*

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M.Sc. BOTANY, PART-I

Practical Counselling Classes and Practical Examination Programme, 2017

Venue : Botany Lab, 1st Floor, Biscomaun Tower, Patna

Practical Counselling Class Programme

Enrollment No.	Batch	Date	Paper	Date	Paper	Time (Daily)
All Old Students	B1	30.05.2017	I to IV	31.05.2017	V to VIII	9.00 AM to 3.00 PM
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160260166 to 160260220	B5	16.06.2017	I to IV	17.06.2017	V to VIII	9.00 AM to 3.00 PM
160260221 to 160260269	B6	18.06.2017	I to IV	19.06.2017	V to VIII	9.00 AM to 3.00 PM

Practical Examination Programme

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05.06.2017	B1	III	B1	IV	B2	III	B2	IV
06.06.2017	B1	V	B1	VI	B2	V	B2	VI
07.06.2017	B1	VII	B1	VIII	B2	VII	B2	VIII
12.06.2017	B3	I	B3	II	B4	I	B4	II
13.06.2017	B3	III	B3	IV	B4	III	B4	IV
14.06.2017	B3	V	B3	VI	B4	V	B4	VI
15.06.2017	B3	VII	B3	VIII	B4	VII	B4	VIII
20.06.2017	B5	I	B5	II	B6	I	B6	II
21.06.2017	B5	III	B5	IV	B6	III	B6	IV
22.06.2017	B5	V	B5	VI	B6	V	B6	VI
23.06.2017	B5	VII	B5	VIII	B6	VII	B6	VIII

NALANDA OPEN UNIVERSITY

M.Sc. Botany, Part-I PAPER-V

(Diversity of seed plants and their taxonomy)

Annual Examination, 2017

Time : 3 Hours.

Full Marks : 80

Answer Five Questions in all, selecting at least Two Questions from each group.

All questions carry equal marks.

GROUP 'A'

1. Give an account of cordianthus and its affinities.
2. Write short notes on any two of the following:
(a) Medicinal use of Gymnosperms (b) Coralloid root of cycas and its significance
(c) Distribution of Genetales (d) Anatomical feature of needle of Pinus
3. Give an account of female gametophyte of Pinus.
4. Give an account of Male gametophyte of Taxus.
5. Write short notes on any two of the following:
(a) Ovule of Bennettites (b) Geological record of Gymnosperm
(c) Affinity of Gymnosperms with Pteridophyte (d) Wood of Pinus

GROUP 'B'

6. Describe system of classification as proposed by Cronquist.
7. Discuss the phylogeny of family magnoliaceae.
8. Write short notes any two of the following:
(a) National Botanical garden (b) Natural system of classification
(c) Cytotaxonomy (d) Herbarium
9. Describe in detail on family Papilionaceae
10. Write short notes on any **Two** of the following :-
(a) Verticillaster (b) Hypanthodium
(c) Botanical name of four plants of economic importance with family
(d) Cyathium

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M.Sc. BOTANY, PART-I

Practical Counselling Classes and Practical Examination Programme, 2017

Venue : Botany Lab, 1st Floor, Biscomaun Tower, Patna

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06.06.2017	B1	V	B1	VI	B2	V	B2	VI
07.06.2017	B1	VII	B1	VIII	B2	VII	B2	VIII
12.06.2017	B3	I	B3	II	B4	I	B4	II
13.06.2017	B3	III	B3	IV	B4	III	B4	IV
14.06.2017	B3	V	B3	VI	B4	V	B4	VI
15.06.2017	B3	VII	B3	VIII	B4	VII	B4	VIII
20.06.2017	B5	I	B5	II	B6	I	B6	II
21.06.2017	B5	III	B5	IV	B6	III	B6	IV
22.06.2017	B5	V	B5	VI	B6	V	B6	VI
23.06.2017	B5	VII	B5	VIII	B6	VII	B6	VIII

NALANDA OPEN UNIVERSITY

M.Sc. Botany, Part-I PAPER-VI

(Management of Forest Resources)
Annual Examination, 2017

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions. All questions carry equal marks.

1. How forest resources can be protected and managed.
2. Give an account of vegetative propagation of forest plants.
3. What are the methods of application of tissue culture in forestry. How is it advantageous for tree improvement.
4. Explain the role of agroforestry in India.
5. What are different methods of plantation in India.
6. Give an account of forest ecosystem. Mention its important component.
7. Give an account of various drugs and spices obtained from forest.
8. What are benefits of forest reserve. Describe methods for its conservation.
9. Discuss the role of somatic embryogenesis.
10. Write short notes on any **Two** of the following :—
 - (a) Causes of decline of forest
 - (b) Grading of timber
 - (c) Afforestation programme
 - (d) MAB

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M.Sc. BOTANY, PART-I

Practical Counselling Classes and Practical Examination Programme, 2017

Venue : Botany Lab, 1st Floor, Biscomaun Tower, Patna

Practical Counselling Class Programme

Enrollment No.	Batch	Date	Paper	Date	Paper	Time (Daily)
All Old Students	B1	30.05.2017	I to IV	31.05.2017	V to VIII	9.00 AM to 3.00 PM
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160260166 to 160260220	B5	16.06.2017	I to IV	17.06.2017	V to VIII	9.00 AM to 3.00 PM
160260221 to 160260269	B6	18.06.2017	I to IV	19.06.2017	V to VIII	9.00 AM to 3.00 PM

Practical Examination Programme

Date	Time							
	8.00 AM to 10.00 AM		10.30 AM to 12.30 PM		1.30 PM to 3.30 PM		4.00 PM to 6.00 PM	
	Batch	Paper	Batch	Paper	Batch	Paper	Batch	Paper
03.06.2017	B1	I	B1	II	B2	I	B2	II
05.06.2017	B1	III	B1	IV	B2	III	B2	IV
06.06.2017	B1	V	B1	VI	B2	V	B2	VI
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12.06.2017	B3	I	B3	II	B4	I	B4	II
13.06.2017	B3	III	B3	IV	B4	III	B4	IV
14.06.2017	B3	V	B3	VI	B4	V	B4	VI
15.06.2017	B3	VII	B3	VIII	B4	VII	B4	VIII
20.06.2017	B5	I	B5	II	B6	I	B6	II
21.06.2017	B5	III	B5	IV	B6	III	B6	IV
22.06.2017	B5	V	B5	VI	B6	V	B6	VI
23.06.2017	B5	VII	B5	VIII	B6	VII	B6	VIII

NALANDA OPEN UNIVERSITY

M.Sc. Botany, Part-I

PAPER–VII

(Cell Biology)

Annual Examination, 2017

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions. All questions carry equal marks.

1. What is plasma membrane ? Describe fluid mosaic of plasma membrane.
2. Give an account of ultrastructure of chloroplast and its function.
3. What is cell cycle ? Describe with suitable diagram and illustration different steps of mitosis.
4. What is senescence of a cell ? Describe the changes that occur in a cell during senescence.
5. Describe in detail prophase of meiosis. Describe significance of this phase.
6. What do you mean by ecological amplitude in the cell under fresh water environment.
7. Write short notes on any **Two** of the following :—
 - (a) Structure of eukaryotic chromosome
 - (b) Chemical structure of DNA
 - (c) Types of viral genome.
8. Give an experimental proof to support biochemical theory of origin of life.
9. Write short notes on any **Two** of the following :—
 - (a) Function of Lysosome
 - (b) Types of RNA and its function
 - (c) Peroxisome and its function
10. Mention steps followed during preparation of a cytological preparation of a cell.

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M.Sc. BOTANY, PART–I

Practical Counselling Classes and Practical Examination Programme, 2017

Venue : Botany Lab, 1st Floor, Biscomaun Tower, Patna

Practical Counselling Class Programme

Enrollment No.	Batch	Date	Paper	Date	Paper	Time (Daily)
All Old Students	B1	30.05.2017	I to IV	31.05.2017	V to VIII	9.00 AM to 3.00 PM
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160260221 to 160260269	B6	18.06.2017	I to IV	19.06.2017	V to VIII	9.00 AM to 3.00 PM

Practical Examination Programme

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	8.00 AM to 10.00 AM		10.30 AM to 12.30 PM		1.30 PM to 3.30 PM		4.00 PM to 6.00 PM	
	Batch	Paper	Batch	Paper	Batch	Paper	Batch	Paper
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06.06.2017	B1	V	B1	VI	B2	V	B2	VI
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12.06.2017	B3	I	B3	II	B4	I	B4	II
13.06.2017	B3	III	B3	IV	B4	III	B4	IV
14.06.2017	B3	V	B3	VI	B4	V	B4	VI
15.06.2017	B3	VII	B3	VIII	B4	VII	B4	VIII
20.06.2017	B5	I	B5	II	B6	I	B6	II
21.06.2017	B5	III	B5	IV	B6	III	B6	IV
22.06.2017	B5	V	B5	VI	B6	V	B6	VI
23.06.2017	B5	VII	B5	VIII	B6	VII	B6	VIII

NALANDA OPEN UNIVERSITY

M.Sc. Botany, Part-I PAPER-VIII

(Plant Anatomy and Embryology)

Annual Examination, 2017

Time : 3 Hours.

Full Marks : 80

Answer Five Questions in all, selecting at least Two Questions from each group.

All questions carry equal marks.

GROUP 'A'

- What do you mean by meristematic tissue ? Give an account of classification of meristem.
- Give an account of Vascular tissues found in a typical flower.
- Write short notes on any **Two** of the following:
 - Healing of Wound
 - Apical cell theory
 - Guard cells and its role
 - Function of cambium
- What are the internal factors that govern the differentiation of tissues.
- Write short notes on any **Four** of the following:
 - Polarity
 - Dermatogen
 - Cuticle
 - Vascular bundle of monocot stem
 - Vascular bundle of Dicot root
 - Tracheids and vessels

GROUP 'B'

- Describe protocol for tissue culture of plant part.
- Describe different barriers to fertilization and methods to overcome it.
- Write short notes any two of the following:
 - Parthenocarpy
 - Morphological nature of Endosperm
 - Double fertilization and Triple fusion
 - Adventive embryo
- Describe causes of polyembryony and its application.
- Give an account of experimental embryology.

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M.Sc. BOTANY, PART-I

Practical Counselling Classes and Practical Examination Programme, 2017

Venue : Botany Lab, 1st Floor, Biscomaun Tower, Patna

Practical Counselling Class Programme

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Practical Examination Programme

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12.06.2017	B3	I	B3	II	B4	I	B4	II
13.06.2017	B3	III	B3	IV	B4	III	B4	IV
14.06.2017	B3	V	B3	VI	B4	V	B4	VI
15.06.2017	B3	VII	B3	VIII	B4	VII	B4	VIII
20.06.2017	B5	I	B5	II	B6	I	B6	II
21.06.2017	B5	III	B5	IV	B6	III	B6	IV
22.06.2017	B5	V	B5	VI	B6	V	B6	VI
23.06.2017	B5	VII	B5	VIII	B6	VII	B6	VIII

NALANDA OPEN UNIVERSITY

M.Sc. Botany, Part-II PAPER-IX

(Plant Physiology and Biochemistry)

Annual Examination, 2017

Time : 3 Hours.

Full Marks : 80

Answer Five Questions in all, selecting at least Two Questions from each group.

All questions carry equal marks.

GROUP 'A'

- Write short notes on any **Two** of the following:
 - Phytochrome
 - Cytochrome
 - Red light and Far Red light and its significance
- Give an account of Calvin cycle. Give few points to explain difference between C_3 and C_4 plants.
- Give an account of the induced movements in plants.
- What is Stress ? Give a brief account of salt stress in plants.
- Write short notes on any **Two** of the following:
 - Nastic movement
 - Phototaxis
 - Geotropism and Auxins

GROUP 'B'

- Why proteins are recognized as Biomolecules. Authenticate ?
- Describe biochemical nitrogen fixation.
- Define biomolecules and justify that carbohydrates are biomolecules.
- What is an Enzyme ? Give an account of nomenclature and classification of enzyme.
- Write short notes on any **Two** of the following:
 - Nitrogen cycle
 - Nitrate assimilation in plants
 - Role of chlorophyll in Photosynthesis
 - Exothermic and Endothermic reactions

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Examination Programme, 2017

M.Sc. Botany, Part-II

Date	Paper	Time	Examination Centre
02.06.2017	Paper-IX	8.00 AM to 11.00 AM	Nalanda Open University, Patna
06.06.2017	Paper-X	8.00 AM to 11.00 AM	Nalanda Open University, Patna
08.06.2017	Paper-XI	8.00 AM to 11.00 AM	Nalanda Open University, Patna
10.06.2017	Paper-XII	8.00 AM to 11.00 AM	Nalanda Open University, Patna
12.06.2017	Paper-XIII	8.00 AM to 11.00 AM	Nalanda Open University, Patna
14.06.2017	Paper-XIV	8.00 AM to 11.00 AM	Nalanda Open University, Patna
16.06.2017	Paper-XV	8.00 AM to 11.00 AM	Nalanda Open University, Patna
19.06.2017	Paper-XVI	8.00 AM to 11.00 AM	Nalanda Open University, Patna

M.Sc. Botany, Part-II

Programme for Practical Counselling Classes and Practical Examination, 2017

Venue : 1st Floor, Biscomaun Tower, Patna

Practical Counselling Class Programme

Enrollment No.	Batch	Date	Paper	Time (Daily)
All Old Students & 150260001 to 150260033	B1	11.07.2017 & 12.07.2017	IX to XVI	9.00 AM to 3.00 PM
150260034 to 150260132	B2	17.07.2017 & 18.07.2017	IX to XVI	9.00 AM to 3.00 PM
150260133 to 150260237	B3	22.07.2017 & 24.07.2017	IX to XVI	9.00 AM to 3.00 PM

Practical Examination Programme

Date	Time					
	9.00 AM to 11.00 AM		11.30 AM to 1.30 PM		2.00 PM to 4.00 PM	
	Batch	Paper	Batch	Paper	Batch	Paper
13.07.2017	B1	IX	B1	X	B1	XI
14.07.2017	B1	XII	B1	XIII	B1	XIV
15.07.2017	B1	XV	B1	XVI	—	
19.07.2017	B2	IX	B2	X	B2	XI
20.07.2017	B2	XII	B2	XIII	B2	XIV
21.07.2017	B2	XV	B2	XVI	—	
25.07.2017	B3	IX	B3	X	B3	XI
26.07.2017	B3	XII	B3	XIII	B3	XIV
27.07.2017	B3	XV	B3	XVI	—	

NALANDA OPEN UNIVERSITY

M.Sc. Botany, Part-II PAPER-X

(Cytogenetics and Crop improvement)

Annual Examination, 2017

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions. All questions carry equal marks.

- Define crossing over. Describe the mechanism of crossing over.
- What is translocation ? What do you mean by heterozygous translocation.
- Give an account of the structure and significance of supernumerary chromosomes.
- Write short notes on any **Two** of the following :—
(a) Plasmid as vector (b) Bacteriophage as vector
(c) High iron rice (d) DNA fingerprinting
- Write short notes on any **Two** of the following :—
(a) Lampbrush chromosome (b) Polytene Chromosome
(c) Idiogram (d) Nucleosome
- Write short notes on :—
(a) Different types of banding patterns of chromosome in plants
(b) Sex linkage in Drosophila
- How Mendelian ration stands modified. Give one example.
- Describe the different tools employed in Genetic engineering. Briefly mention their significance.
- Write short notes on:—
(a) Aneuploid (b) Polyploids in crop improvement
- Explain gene regulation in Prokaryotes.

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Examination Programme, 2017

M.Sc. Botany, Part-II

Date	Paper	Time	Examination Centre
02.06.2017	Paper-IX	8.00 AM to 11.00 AM	Nalanda Open University, Patna
06.06.2017	Paper-X	8.00 AM to 11.00 AM	Nalanda Open University, Patna
08.06.2017	Paper-XI	8.00 AM to 11.00 AM	Nalanda Open University, Patna
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14.06.2017	Paper-XIV	8.00 AM to 11.00 AM	Nalanda Open University, Patna
16.06.2017	Paper-XV	8.00 AM to 11.00 AM	Nalanda Open University, Patna
19.06.2017	Paper-XVI	8.00 AM to 11.00 AM	Nalanda Open University, Patna

M.Sc. Botany, Part-II

Programme for Practical Counselling Classes and Practical Examination, 2017

Venue : 1st Floor, Biscomaun Tower, Patna

Practical Counselling Class Programme

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Practical Examination Programme

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	9.00 AM to 11.00 AM		11.30 AM to 1.30 PM		2.00 PM to 4.00 PM	
	Batch	Paper	Batch	Paper	Batch	Paper
13.07.2017	B1	IX	B1	X	B1	XI
14.07.2017	B1	XII	B1	XIII	B1	XIV
15.07.2017	B1	XV	B1	XVI	—	
19.07.2017	B2	IX	B2	X	B2	XI
20.07.2017	B2	XII	B2	XIII	B2	XIV
21.07.2017	B2	XV	B2	XVI	—	
25.07.2017	B3	IX	B3	X	B3	XI
26.07.2017	B3	XII	B3	XIII	B3	XIV
27.07.2017	B3	XV	B3	XVI	—	

NALANDA OPEN UNIVERSITY

M.Sc. Botany, Part-II

PAPER–XI

(Molecular Biology)

Annual Examination, 2017

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions. All questions carry equal marks.

- How did Hershey and chase using Bacteriophage differentiate between DNA and protein in their experiment ?
- What are different types of RNA in Prokaryotes and Eukaryotes.
- How Meselson and Stahl prove that replication of DNA is semi-conservative ?
- Write short notes on :—
(a) Significance of DNA repair
(b) Wobble hypothesis
- What are the general properties of the genetic code ?
- Describe briefly steps in initiation of protein synthesis in prokaryotes.
- Write short notes on :—
(a) Initiation factor in eukaryotes
(b) Splicing (processing of H_n RNA)
- Write short notes on :—
(a) Exon
(b) Activation of amino acids during protein synthesis
- Explain operon concept of gene regulation in prokaryotes.
- Differentiate between polycistronic and monocistronic genes.

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Examination Programme, 2017

M.Sc. Botany, Part-II

Date	Paper	Time	Examination Centre
02.06.2017	Paper–IX	8.00 AM to 11.00 AM	Nalanda Open University, Patna
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M.Sc. Botany, Part–II

Programme for Practical Counselling Classes and Practical Examination, 2017

Venue : 1st Floor, Biscomaun Tower, Patna

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Practical Examination Programme

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14.07.2017	B1	XII	B1	XIII	B1	XIV
15.07.2017	B1	XV	B1	XVI	—	
19.07.2017	B2	IX	B2	X	B2	XI
20.07.2017	B2	XII	B2	XIII	B2	XIV
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27.07.2017	B3	XV	B3	XVI	—	

NALANDA OPEN UNIVERSITY

M.Sc. Botany, Part-II

PAPER–XII

(Environmental Biology)

Annual Examination, 2017

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions. All questions carry equal marks.

1. Give an account of major Biomes of the World.

Or

Describe the major vegetations of World.

2. Write short notes on :—

(a) Energy flow concept of Ecosystem (b) Ecological pyramid

3. In detail discuss interaction among population of the World.

Or

Define population. Give a concise account of various characteristics of population of organisms.

4. Write an essay on Air pollution.

5. Define restoration, remediation, reclamation. Give examples of each.

6. What is Genecology ? Describe various types of ecological groups of population on the basis of their genotype.

7. State and explain how human activity is the major threat to biodiversity.

8. Write short notes on :—

(a) Positive interaction (b) Negative interaction

(c) Significance of western ghats (d) Hott spots of biodiversity in India

9. Describe the concept of ecological management ? Describe principles and goals of this management.

10. Acquaint with natural disasters and write how to mitigate their hazards.

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Examination Programme, 2017

M.Sc. Botany, Part-II

<i>Date</i>	<i>Paper</i>	<i>Time</i>	<i>Examination Centre</i>
02.06.2017	Paper–IX	8.00 AM to 11.00 AM	Nalanda Open University, Patna
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19.06.2017	Paper–XVI	8.00 AM to 11.00 AM	Nalanda Open University, Patna

M.Sc. Botany, Part–II

Programme for Practical Counselling Classes and Practical Examination, 2017

Venue : 1st Floor, Biscomaun Tower, Patna

Practical Counselling Class Programme

<i>Enrollment No.</i>	<i>Batch</i>	<i>Date</i>	<i>Paper</i>	<i>Time (Daily)</i>
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150260133 to 150260237	B3	22.07.2017 & 24.07.2017	IX to XVI	9.00 AM to 3.00 PM

Practical Examination Programme

<i>Date</i>	<i>Time</i>					
	<i>9.00 AM to 11.00 AM</i>		<i>11.30 AM to 1.30 PM</i>		<i>2.00 PM to 4.00 PM</i>	
	<i>Batch</i>	<i>Paper</i>	<i>Batch</i>	<i>Paper</i>	<i>Batch</i>	<i>Paper</i>
13.07.2017	B1	IX	B1	X	B1	XI
14.07.2017	B1	XII	B1	XIII	B1	XIV
15.07.2017	B1	XV	B1	XVI	—	
19.07.2017	B2	IX	B2	X	B2	XI
20.07.2017	B2	XII	B2	XIII	B2	XIV
21.07.2017	B2	XV	B2	XVI	—	
25.07.2017	B3	IX	B3	X	B3	XI
26.07.2017	B3	XII	B3	XIII	B3	XIV
27.07.2017	B3	XV	B3	XVI	—	

NALANDA OPEN UNIVERSITY

M.Sc. Botany, Part-II PAPER–XIII

(Plant Resources, Utilization and Conservation)
Annual Examination, 2017

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions. All questions carry equal marks.

- Define Biodiversity. Explain species, genetic and ecosystem diversity briefly.
- What are the implications of green revolution highlight its negative implications ?
- Write short notes on any **Two** of the following :—
(a) World Centres of primary diversity of cultivated plant
(b) Importance of bio-reserves in conservation
(c) Name five sanctuaries of India and their importance.
- Write short notes on :—
(a) Write the names of five organization of DBT and their research activity
(b) Organizational set up of ICAR.
- Write short notes on :—
(a) Coral reef and their importance (b) Role of BSI in flora conservation
- Write briefly role of natural parks in *in situ* conservation.
- Describe the method of protoplast isolation and its culture.
- Describe steps involved in tissue culture of plants.
- Describe different reasons for depletion of biodiversity. Describe few steps to overcome this process.
- Name :
(a) Five medicinal Plants (b) Five cereal yielding plants
(c) Plant products used in poultry feeds (d) Five oil Yielding plants.

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Examination Programme, 2017

M.Sc. Botany, Part-II

Date	Paper	Time	Examination Centre
02.06.2017	Paper-IX	8.00 AM to 11.00 AM	Nalanda Open University, Patna
06.06.2017	Paper-X	8.00 AM to 11.00 AM	Nalanda Open University, Patna
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16.06.2017	Paper-XV	8.00 AM to 11.00 AM	Nalanda Open University, Patna
19.06.2017	Paper-XVI	8.00 AM to 11.00 AM	Nalanda Open University, Patna

M.Sc. Botany, Part-II

Programme for Practical Counselling Classes and Practical Examination, 2017

Venue : 1st Floor, Biscomaun Tower, Patna

Practical Counselling Class Programme

Enrollment No.	Batch	Date	Paper	Time (Daily)
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Practical Examination Programme

Date	Time					
	9.00 AM to 11.00 AM		11.30 AM to 1.30 PM		2.00 PM to 4.00 PM	
	Batch	Paper	Batch	Paper	Batch	Paper
13.07.2017	B1	IX	B1	X	B1	XI
14.07.2017	B1	XII	B1	XIII	B1	XIV
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21.07.2017	B2	XV	B2	XVI	—	
25.07.2017	B3	IX	B3	X	B3	XI
26.07.2017	B3	XII	B3	XIII	B3	XIV
27.07.2017	B3	XV	B3	XVI	—	

NALANDA OPEN UNIVERSITY

M.Sc. Botany, Part-II

PAPER-XIV

(Ethnobotany)

Annual Examination, 2017

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions. All questions carry equal marks.

1. Give a brief account of future strategy of ethnobotany.
2. Highlight the importance of indigenous medicinal plants, how can they help in deciding future strategy.
3. Describe the methods of storage of herbal drugs.
4. What are scientific principles adopted for identification of a plant. What is their importance.
5. Name the original homeland of some important crops. Mention Vavilov's contribution in origin and cultivation of plants.
6. Write short notes on :-
(a) Export potential of medicinal plants in India
(b) Number of plants and amphibian species considered to be threatened
7. Write short notes on :-
(a) CITES (b) IUCN (c) Seed gene bank (d) Cryo preservation
8. Write short notes on :-
(a) Ethnobotany of religious plants
(b) Ethnobotany of plants used for making agricultural implements
9. Mention the *ex-situ* conservation strategies.
10. What are Vitamins ? Describe the sources of different vitamins.

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Examination Programme, 2017

M.Sc. Botany, Part-II

Date	Paper	Time	Examination Centre
02.06.2017	Paper-IX	8.00 AM to 11.00 AM	Nalanda Open University, Patna
06.06.2017	Paper-X	8.00 AM to 11.00 AM	Nalanda Open University, Patna
08.06.2017	Paper-XI	8.00 AM to 11.00 AM	Nalanda Open University, Patna
10.06.2017	Paper-XII	8.00 AM to 11.00 AM	Nalanda Open University, Patna
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14.06.2017	Paper-XIV	8.00 AM to 11.00 AM	Nalanda Open University, Patna
16.06.2017	Paper-XV	8.00 AM to 11.00 AM	Nalanda Open University, Patna
19.06.2017	Paper-XVI	8.00 AM to 11.00 AM	Nalanda Open University, Patna

M.Sc. Botany, Part-II

Programme for Practical Counselling Classes and Practical Examination, 2017

Venue : 1st Floor, Biscomaun Tower, Patna

Practical Counselling Class Programme

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Practical Examination Programme

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27.07.2017	B3	XV	B3	XVI	—	

NALANDA OPEN UNIVERSITY

M.Sc. Botany, Part-II

PAPER–XV

(Aerobiology)

Annual Examination, 2017

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions. All questions carry equal marks.

- Write the criteria for grouping organisms into give kingdom of classification, proposed by whittaker's.
- Write an essay on aeromycoflora.
- Write short notes on any **Two** of the following :-
(a) Immunity (b) Food allergy (c) Allergens its kind (d) Air borne allergy diseases
- Explain sampling techniques in detail.
- What is aerobiology as a branch of Botany ? Write a note on microorganisms concerned with allergy and found in air.
- Write short notes on :-
(a) Structure of different types of pollen
(b) Role of pollen grain in causing allergy reaction
- Explain the various methods of release of fungal spores.
- Write short notes on any **Two** of the following :-
(a) Air borne culturable microorganisms
(b) Viable and non-viable atmospheric air borne microorganisms
(c) Clinical and environmental microbiology.
- Write short notes on :-
(a) Forecasting in relation to Aerobiology
(b) Sampling principles for collection of microorganisms.
- Describe the post-fertilization changes leading to the formation of Ascospore.

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Examination Programme, 2017

M.Sc. Botany, Part-II

Date	Paper	Time	Examination Centre
02.06.2017	Paper–IX	8.00 AM to 11.00 AM	Nalanda Open University, Patna
06.06.2017	Paper–X	8.00 AM to 11.00 AM	Nalanda Open University, Patna
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19.06.2017	Paper–XVI	8.00 AM to 11.00 AM	Nalanda Open University, Patna

M.Sc. Botany, Part–II

Programme for Practical Counselling Classes and Practical Examination, 2017

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Practical Counselling Class Programme

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NALANDA OPEN UNIVERSITY

M.Sc. Botany, Part-II PAPER–XVI

(Biotechnology and Bioinformatics)
Annual Examination, 2017

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions. All questions carry equal marks.

- Describe different branches of Biotechnology. Discuss modern aspect of any one in detail.
- What is tissue culture ? Describe basic requirements for tissue culture. Briefly mention the technique involved.
- Write short notes on any **Two** of the following :-
(a) Morphogenesis (b) Anther culture-protocol
(c) somatic embryogenesis (d) Culture media used in tissue culture
- Describe the technique involved in production of Somatic hybrids.
- Write short notes on any **Two** of the following :-
(a) Cryopreservation (b) Cybrids
(c) Artificial seed (d) Isolation of protoplast
- Describe the role of recombinant DNA technology in Agriculture.
- Write an essay on application of enzymes (Various) in recombinant DNA research (Biotechnology).
- Write short notes on :-
(a) Human immune system (b) Antigens
(c) Rh factor (d) Cell mediated and humoral immunity
- What are secondary metabolites ? Describe how and when secondary metabolites are produced by plants.
- Write short notes on :-
(a) Genetic counselling (b) Proteomics

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Examination Programme, 2017 M.Sc. Botany, Part-II

Date	Paper	Time	Examination Centre
02.06.2017	Paper-IX	8.00 AM to 11.00 AM	Nalanda Open University, Patna
06.06.2017	Paper-X	8.00 AM to 11.00 AM	Nalanda Open University, Patna
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M.Sc. Botany, Part-II

Programme for Practical Counselling Classes and Practical Examination, 2017

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21.07.2017	B2	XV	B2	XVI	—	
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26.07.2017	B3	XII	B3	XIII	B3	XIV
27.07.2017	B3	XV	B3	XVI	—	