

NALANDA OPEN UNIVERSITY
M.Sc. Botany
PART-I, PAPER-I
(Biodiversity of Plant and Diversity of Algae)
Annual Examination, 2013

Time : 3 Hours.

Full Marks : 80

*Answer any Five Questions, selecting at least two questions from each group.
All questions carry equal marks.*

GROUP 'A'

1. Explain different types of Biodiversity.
2. Describe the utilization of Biodiversity.
3. Explain biogeochemical cycle and describe N₂ cycle.
4. Describe the causes of loss of Biodiversity.
5. Write short notes on any four of the following:
 - (a) Carbon cycle
 - (b) Commensalism
 - (c) Mutualism
 - (d) Components of ecosystem
 - (e) Productivity
 - (f) Natural resources

GROUP 'B'

6. Mention the range of Vegetative structure of green Algae.
7. Describe the characteristics of Cyanophyceae, Phaeophyceae and Rhodophyceae.
8. Write a brief account of economic importance of Algae.
9. Give an account of sexual reproduction of Rhodophyceal.
10. Write short notes on any four of the following.
 - (a) Parasitic Algae
 - (b) Symbiotic Algae
 - (c) Algal association with animals
 - (d) Algae as food
 - (e) Agar-Agar
 - (f) Kelp.

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Examination Programme, 2013
M.Sc. Botany, Part-I

Date	Paper	Time	Examination Centre
17.07.2013	Paper-I	3.30 PM to 6.30 PM	D.A.V. Public School Punaichak, Patna
19.07.2013	Paper-II	3.30 PM to 6.30 PM	D.A.V. Public School Punaichak, Patna
23.07.2013	Paper-III	3.30 PM to 6.30 PM	D.A.V. Public School Punaichak, Patna
25.07.2013	Paper-IV	3.30 PM to 6.30 PM	D.A.V. Public School Punaichak, Patna
27.07.2013	Paper-V	3.30 PM to 6.30 PM	D.A.V. Public School Punaichak, Patna
29.07.2013	Paper-VI	3.30 PM to 6.30 PM	D.A.V. Public School Punaichak, Patna
31.07.2013	Paper-VII	3.30 PM to 6.30 PM	D.A.V. Public School Punaichak, Patna
02.08.2013	Paper-VIII	3.30 PM to 6.30 PM	D.A.V. Public School Punaichak, Patna

NALANDA OPEN UNIVERSITY
M.Sc. Botany
PART-I, PAPER-II
(Microbiology and diversity of Fungi)
Annual Examination, 2013

Time : 3 Hours.

Full Marks : 80

*Answer any Five Questions, selecting at least two questions from each group.
All questions carry equal marks.*

GROUP 'A'

1. Describe the structure and reproduction of bacteriophage.
2. Write short notes on any **four** of the following:
 - (a) Prion
 - (b) Viroid
 - (c) Contribution of Stanley
 - (d) Contribution of Robert Koch
 - (e) Nitrifying bacteria
 - (f) Rhizobiaceae
3. Describe the relationship between plasmids and episomes.
4. Describe the positive impact of microbes in brief.
5. Describe the role of microbes on any **Two** of the following :-
 - (a) Diseases in man and plants
 - (b) Spoilage of natural products
 - (c) Food Poisoning

GROUP 'B'

6. Describe different methods of sexual reproduction in Fungi.
7. Write an essay on the cultivation of mushroom.
8. Define heterothallism and describe it in Fungi
9. Describe the life cycle of the members of Zygomycetes in general.
10. Write short notes on any **four** of the following.
 - (a) Apothecium
 - (b) Zoospore
 - (c) Germination of teleutospore
 - (d) Basidiocarp
 - (e) Clamp connection
 - (f) Saprophytes

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NALANDA OPEN UNIVERSITY

M.Sc. Botany

PART-I, PAPER-III

(Plant Pathology)

Annual Examination, 2013

Time: 3 Hours.

Full Marks: 80

Answer any Five Questions. All questions carry equal marks.

1. Do you agree that enzymes play role in pathogenesis?
2. Define phytoalexins and also give their examples and their role in defence against plant diseases.
3. Write short notes on any four of the following.
 - (a) Non-infectious disease
 - (b) Contribution of K.C. Mehta.
 - (c) Endemic disease
 - (d) Systemic disease
 - (e) Contribution of prof. Millardet
 - (f) True resistance
4. Give an account of organic fungicides.
5. Define quarantine with respect to plant disease. Mention the mechanism of plant quarantine and its organization in India.
6. Discuss the major divisions of plant disease control. Write to what extent the crop rotation and hot water treatment are effective in plant disease control.
7. Write notes on any four of the following:
 - (a) Quality of good fungicides
 - (b) Bordeaux mixture
 - (c) Vitavax
 - (d) Bavistin
 - (e) Antagonism
 - (f) Antibiotics.
8. Describe the symptom, etiology, disease cycle and control of tikka disease of groundnut.
9. Describe the symptom, causal organism, disease cycle and control of blast of rice.
10. Differentiate between the meaning of terms in four sets of the following:
 - (a) Soilborne and seedborne disease
 - (b) Rust and Sumt
 - (c) Autoecious and Heteroecious
 - (d) Blight and Blast
 - (e) Hypertrophy and Hyperplasia
 - (f) Infectious and Non-infectious disease.

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NALANDA OPEN UNIVERSITY
M.Sc. Botany
PART-I, PAPER-IV
(Biology and diversity of Bryophyta and Pteridophyta)
Annual Examination, 2013

Time: 3 Hours.

Full Marks: 80

*Answer any Five Questions, selecting at least two questions from each group.
All questions carry equal marks.*

GROUP 'A'

1. Describe the general characteristics of Bryophyta.
2. Describe the salient feature of the order Marchantiales and mention its affinities.
3. Describe the structure and reproduction of Takakia.
4. Give an account of the economic importance of Bryophyta.
5. Write short notes on any four of the following.
 - (a) Gemma cup
 - (b) Capsule of Anthoceros
 - (c) Elaters
 - (d) Columella
 - (e) Fossil Hepaticopsida
 - (f) Sporophyte of Riccia

GROUP 'B'

6. Describe the feature of Different divisions of Pteriophyta based on N.S.Parihar.
7. Give an account of the origin of seed habit.
8. Pteridophyta are simplest vascular plants. Justify.
9. Give an account of Psilotaceae with reference to spore Producing organ.
10. Write short notes on any Two of the following.
 - (a) Protostele
 - (b) Rhyniophyta
 - (c) Spore producing organ of Isoetes
 - (d) Sorus

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NALANDA OPEN UNIVERSITY
M.Sc. Botany
PART-I, PAPER-V
(Diversity of Seed Plants and their Taxonomy)
Annual Examination, 2013

Time: 3 Hours.

Full Marks: 80

*Answer any Five Questions, selecting at least two questions from each group.
All questions carry equal marks.*

GROUP 'A'

1. Give an account of classification of Gymnosperm upto the level of classes.
2. Describe the reproductive organ of *Williamsonia*.
3. Give an account of male reproductive organ of *Cycadeoidea*.
4. Give an account of the development of the female gametophyte of *Cycas*, *Pinus* and *Taxus*.
5. Write notes on any **Two** of the following :—
 - (a) Medicinal use of Gymnosperms
 - (b) Distribution of Gnetales
 - (c) Phylogeny of Cycadales
 - (d) Mesozoic

GROUP 'B'

6. Describe the pre-Linnaean and post-Linnaean system of plant classification.
7. Describe the system of classification of Angiosperm as proposed by Cronquist.
8. Describe the family papilionaceae in details.
9. Discuss the phylogeny of the family Magnoliaceae.
10. Write notes on any **Two** of the following :—
 - (a) Natural system of classification
 - (b) Homology
 - (c) ICBN
 - (d) Cytotaxonomy

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NALANDA OPEN UNIVERSITY

M.Sc. Botany

PART-I, PAPER-VII

(Cell Biology)

Annual Examination, 2013

Time: 3 Hours.

Full Marks: 80

Answer any Five Questions. All questions carry equal marks.

1. Give evidence in support of biochemical theory of origin of life.
2. Describe the structure and function of peroxisome.
3. Give an account of the ultrastructure of mitochondria and its function.
4. What is cell division? Describe with illustration the mitosis and its significance.
5. Give an account of the role played by Gap junction and plasmodesmata in intercellular communication.
6. Describe the ecological amplitude of cell in arid environment.
7. Describe the changes that occur in the cell during senescence.
8. Describe the cytological changes that occur in the development of Acetabularia. What factors do play decisive role in the differentiation of the alga?
9. Give an account of the structure of double helix model of DNA.
10. Write short notes on any four of the following:-
 - (a) G₂ Phase
 - (b) Nitrogenous base
 - (c) Significance of meiosis
 - (d) Significance of nucleus
 - (e) Function of lysosome
 - (f) Pachytene

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NALANDA OPEN UNIVERSITY
M.Sc. Botany
PART-I, PAPER-VIII
(Plant Anatomy and Embryology)
Annual Examination, 2013

Time: 3 Hours.

Full Marks: 80

*Answer five questions selecting at least two questions from each Group.
All Questions carry equal marks.*

GROUP-A

1. What are the factors affecting differentiation and morphogenesis.
2. Describe the classification of stomata.
3. Discuss the contribution of floral anatomy in solving the taxonomic position of disputed taxa.
4. Write about two of the following:
(a) Symmetry of flowers (b) Meristematic potential of cells.
(c) Leaf trace (d) Vascular bundle of monocot stem.
5. Write short notes on any four of the following:
(a) Polarity (b) Procambium (c) Plerome
(d) Epidermal cell (e) Trichomes (f) Subsidiary cell

GROUP-B

6. Discuss the development of pollen.
7. What is endosperm? Describe its development and the morphological nature.
8. Describe the causes of polyembryony and its role in plant breeding.
9. Give an account of the technique of embryo culture. Also mention its application.
10. Write short notes on any four of the following:
(a) Pollen pistil interaction (b) Function of seed coat
(c) Dichogamy (d) Hypogeal germination of seed
(e) Chemically induced parthenocarphy (f) Mixed pollination

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NALANDA OPEN UNIVERSITY
M.Sc. Botany
PART-II, PAPER-IX
(Plant physiology and Biochemistry)
Annual Examination, 2013

Time: 3 Hours.

Full Marks: 80

*Answer five questions selecting at least two questions from each Group.
All Questions carry equal marks.*

GROUP-A

1. Mention the specific role of florigen.
2. Give an illustrated account of induced movement in plants.
3. Give an account of Calvin cycle.
4. What is stress? Give brief account of water and salt stress in plants.
5. Write notes on any **Two** of the following :—
 - (a) Geotropism
 - (b) Biochemical effect of drought
 - (c) Non-cyclic electron transport
 - (d) Methods of breaking seed dormancy

GROUP-B

6. What are enzymes? Give their nomenclature and classification.
7. Why proteins are recognised as biomolecules?
8. What do you mean by glycolysis? Mention the steps of glycolysis.
9. Give a brief account of phytochrome mediated photomorphogenetic response in plants.
10. Write notes on any **Two** of the following :—
 - (a) Nitrogen containing secondary metabolites
 - (b) Transamination
 - (c) Carbohydrates
 - (d) Water soluble vitamins.

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NALANDA OPEN UNIVERSITY
M.Sc. Botany
PART-II, PAPER-X
(Cytogenetics and Crop Improvement)
Annual Examination, 2013

Time: 3 Hours.

Full Marks: 80

Answer any Five Questions. All questions carry equal marks.

1. Describe the chromosome mapping.
2. Give an account of human genetic disorders arising from addition and deletion of chromosomes.
3. Mention the structure and behaviour of lampbrush chromosome with significance.
4. Explain the role of mutation in speciation, evolution and crop improvement.
5. Give an account of sex linkage in *Drosophila*.
6. Write about two of the following:
 - (a) Inversion
 - (b) Independent assortment
 - (c) Synapsis
 - (d) DNA finger printing
7. What is genetic engineering? Describe different tools employed in genetic engineering.
8. Explain gene regulation in Prokaryotes.
9. What do you mean by transgenic plants? Give details about transgenic plant.
10. Write short notes on any two of the following:-
 - (a) Molecular marker
 - (b) Plasmid as vectors
 - (c) Lethal gene
 - (d) Golden rice

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NALANDA OPEN UNIVERSITY

Annual Examination, 2013

M.Sc. Botany

PART-II, PAPER-XI

(Molecular Biology)

Time: 3 Hours.

Full Marks: 80

Answer any Five Questions. All questions carry equal marks.

1. Describe the Watson and Crick model of DNA.
2. How DNA is different from RNA?
3. Discuss the role of RNA in DNA replication.
4. Write about different types of RNA
5. Give an account of Classical experiments which demonstrated the semi conservative model of DNA replication.
6. Write about cracking and deciphering of genetic code.
7. Explain "Operon concept" and describe positive and negative control.
8. What are transposons? How do they help in the rearrangements of the genome?
9. What is "Error-prone Repair"? Why is it initiated during SOS-response?
10. Write notes on any **Two** of the following:
 - (a) Pseudogenes
 - (b) Split genes
 - (c) Inhibitors of protein biosynthesis
 - (d) Activation of amino acids



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Annual Examination, 2013

M.Sc. Botany

PART-II, PAPER-XII

(Environmental Biology)

Time: 3 Hours.

Full Marks: 80

Answer any Five Questions. All questions carry equal marks.

1. What are climatic factors? Give an account of the effect of climate on the form and distribution of plants.
2. What is productivity of ecosystem? Explain the method of measurement of primary productivity.
3. What is population? Give a brief account of the characteristics of population of organisms.
4. What are the sources of water pollution? Describe the methods of control.
5. What do you mean by biogeochemical cycle? Describe nitrogen cycle in nature.
6. Explain, in what way the human activity is the major threat to biodiversity.
7. What do you mean by natural disaster? Describe the way and means to control it.
8. Describe the phytogeographical regions of the world.
9. Write about two of the following:
 - (a) Green house effect
 - (b) Ozone depletion
 - (c) Earthquake
 - (d) Volcano
10. Discuss the objects and guiding principles of environmental policy.

Or,

Give an account of Man and Biosphere Programme.



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NALANDA OPEN UNIVERSITY
Annual Examination, 2013
M.Sc. Botany
PART-II, PAPER-XIII
(Plant Resources, Utilization and Conservation)

Time: 3 Hours.

Full Marks: 80

Answer any Five Questions. All questions carry equal marks.

1. What are the causes of loss of biodiversity?
2. Describe in brief the world centres of diversity of cultivated plants.
3. Mention the need to establish ICAR and its activities in brief.
4. What is wetland? Discuss reason of its depletion and the methods of its conservation in brief.
5. Explain the principles and strategy of *ex.situ* conservation.
6. Write about two of the following:
 - (a) Activities of NBPGR
 - (b) Wildlife sanctuaries of India
 - (c) Importance of National Park
 - (d) Vivipary
7. Describe the methods used in protoplast fusion and production of somatic hybrid.
8. Write an essay on principles and strategy of *in-situ* conservation.
9. Write about two of the following:
 - (a) Cereal yielding plants
 - (b) Oil yielding plants
 - (c) Plants used as cattle feed
 - (d) Fruit yielding plants of Bihar state
10. Give the botanical name of the plants which yield the following items:

(a) Rice grain	(b) Pulse of lentil	(c) Chilli fruit
(d) Cauliflower	(e) Tomato fruit	(f) Tea leaf
(g) Gum arabic	(h) Mustard oil	(i) cotton fibre
(j) Wood of Shisham	(k) Groundnut fruit	(l) Fibre of jute
(m) Paper	(n) Opium	(o) Cumin seed
(p) Soybean seed		



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NALANDA OPEN UNIVERSITY
Annual Examination, 2013
M.Sc. Botany
PART-II, PAPER-XIV
(Ethnobotany)

Time: 3 Hours.

Full Marks: 80

Answer any Five Questions. All questions carry equal marks.

1. What is Ethnobotany ? Describe the scope of ethnobotany in details.
2. Describe the common spices and condiments in brief and their importance.
3. Write the botanical and the family name of any for of the following along with their medicinal uses.
 - (a) Garlic
 - (b) Turmeric
 - (c) Sarpagandha
 - (d) Belladonna
 - (e) Camphor
 - (f) Cumin
4. What do you mean by lipids ? write the characteristic features of lipids and its role in nutrition.
5. Write an essay on storing of herbal drugs.
6. Give an account of ex-situ conservation strategies.
7. What are Vitamins ? Describe the sources of different vitamins.
8. Describe the importance of indigenous medicinal plants.
9. What is the simplest way to identify an unknown plant ?
10. Write short notes on any **Four** of the following :-
 - (a) Seed gene bank
 - (b) Centella asiatica
 - (c) Medicinal plants of Liliaceae
 - (d) Pharmacology
 - (e) Nature of drug
 - (f) Awleh
 - (g) Minerals
 - (h) Animal Protein

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NALANDA OPEN UNIVERSITY

Annual Examination, 2013

M.Sc. Botany

PART-II, PAPER-XV

(Aerobiology)

Time: 3 Hours.

Full Marks: 80

Answer any Five Questions. All questions carry equal marks.

1. Write about Whittaker's contribution in the classification of living organisms. What are the characteristics of different groups
2. Discuss the components of aeroecology.
3. Differentiate between the structure of prokaryotes and Eukaryotic cells
4. Give an account of sources of allergy and mention the allergic response.
5. Describe the salient features of any two of the following :—
 - (a) Algae
 - (b) Fungi
 - (c) Bacteria
 - (d) Protozoa
6. Give an account of aeromycoflora.
7. Describe the development of male gametophyte.
8. Give an account of the structure and type of spores in different groups of fungi.
9. Describe the post fertilization development of ascospore.
10. Write short notes on any **Two** of the following :—
 - (a) Aeromicrobiology
 - (b) Air sampling technique
 - (c) Structure of pollen grain
 - (d) Meteorological impact on the transmission and diffusion of air pollutants



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NALANDA OPEN UNIVERSITY
Annual Examination, 2013
M.Sc. Botany
PART-II, PAPER-XVI
(Biotechnology and Bio informatics)

Time: 3 Hours.

Full Marks: 80

Answer any Five Questions. All questions carry equal marks.

1. Describe the traditional and modern concept of Biotechnology.
2. What is an explant? How will you induce callus formation?
3. What are somatic hybrids? In what way these are helpful in crop improvement?
4. Define cybrids. How these are produced? Write their application.
5. What is micro propagation? Describe the technique of clonal propagation.
6. What polymerase chain reaction? Describe its application for human welfare.
7. Why Agrobacterium is described as natural genetic engineer? Discuss this.
8. Write an essay on the application of enzymes.
9. What are T and B lymphocytes? Describe their role in immunity.
10. Write notes on any **Two** of the following:—
 - (a) Anther and pollen culture
 - (b) Germplasm preservation
 - (c) Bt Cotton
 - (d) Use of bioinformatic tools

or

Write an essay on human immune system.

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