

Nalanda Open University
Annual Examination - 2014
B.Sc. Botany (Honours), Part-I
Paper-I

Time: 3.00 Hrs.

Full Marks: 80

Answer any Five questions. All questions carry equal marks.

1. Describe the structure and reproduction of *Oedogonium*.
2. Give an account of the reproduction of *Vaucheria*.
3. Describe the life cycle of *Ustilago tritici*.
4. Give an account of the structure and reproduction of Lichen.
5. Describe the internal structure of the thallus of *Marchantia* and compare it with that of *Anthoceros*.
6. Compare the structure seen in the longitudinal section of the cone of *Lycopodium* and *Selaginella*.
7. Write short notes on any **Four** of the following :
 - (a) Palmella stage
 - (b) Nucule
 - (c) Pleurilocular sporangia
 - (d) Obligate parasites
 - (e) Cleistothecium
 - (f) Gemma cup
 - (g) Prothallus
 - (h) Archegonium
8. Give an account of the structure of sporocarp of *Marsilea*.
9. Describe the sexual reproduction of *Psilotum*.
10. Compare any **Four** of the following sets :
 - (a) Pigments in Chlorophyceae and Rhodophyceae
 - (b) Structure of Heterocyst and Akinete
 - (c) Zoospores of *Chlamydomonas* and *Ectocarpus*
 - (d) Ascospores and Basidiospores
 - (e) Elaters of *Pellia* and *Equisetum*
 - (f) Haplostele and Actinostele



Examination Programme, 2014
B.Sc (Part – I) All Honours Subjects
Except Home Science and Geography Honours

Date	Papers.	Time	Examination Centre
12/6/2014	(Hons) P-I	8 to 11 am	Nalanda Open University, Patna
14/6/2014	(Hons) P-II	8 to 11 am	Nalanda Open University, Patna
16/6/2014	Rastrabhsha-100 or Hindi +Urdu 100	8 to 11 am	Nalanda Open University, Patna
18/6/2014	Botany (Sub) P-I	8 to 11 am	Nalanda Open University, Patna
19/6/2014	Math (Sub) P-I	8 to 11 am	Nalanda Open University, Patna
20/6/2014	Geography (Sub) P-I	8 to 11 am	Nalanda Open University, Patna
21/6/2014	Chemistry (Sub) P-I	8 to 11 am	Nalanda Open University, Patna
23/6/2014	Physics (Sub) P-I	8 to 11 am	Nalanda Open University, Patna
24/6/2014	Home Scince (Sub)-P I	8 to 11 am	Nalanda Open University, Patna
25/6/2014	Zoology (Sub) P-I	8 to 11 am	Nalanda Open University, Patna

Nalanda Open University
Annual Examination - 2014
B.Sc. Botany (Honours), Part-I
Paper-II

Time: 3.00 Hrs.

Full Marks: 80

Answer any Five questions. All questions carry equal marks.

1. Describe the economic importance of Gymnosperms.
2. Give an account of the development of the female gametophyte of *Taxus*.
3. What do you mean by gametophyte? Describe the development of male gametophyte of *Pinus*.
4. Describe the angiospermic characters of *Gnetum*.
5. On what grounds *Rhynia* is considered as primitive vascular plant?
6. Describe the structure of strobilus of *Lepidodendro*.
7. Write short notes on any **Four** of the following :
 - (a) Xerophytic character of *Pinus* needle
 - (b) Pycnoxylic and Monoxylic wood
 - (c) Petrification
 - (d) Gynoecium of *Cycadeoidea*
 - (e) Palaeostachya
 - (f) Paleozoic
8. Describe Hutchinson's important principle for the cause of classification of Angiosperms.
9. Give an account of the floral characters of Cucurbitaceae giving floral formula and floral diagram. Give botanical name of three plants of economic importance of this family.
10. Assign the following terms to their respective family.

(a) Apocarpous	(b) Cyathium
(c) Sagittate anther	(d) Diplostemonous
(e) Didynamous	(f) Verticillaster
(g) Spikelet	(h) Pollinium

OR

Write the family of the following

- | | |
|------------------------------|---------------------------------|
| (a) <i>Nigelle sativa</i> | (b) <i>Corchorus acutangula</i> |
| (c) <i>Michelia champaca</i> | (d) <i>Croton bonplandianum</i> |
| (e) <i>Mussaenda Luteola</i> | (f) <i>Nerium indicum</i> |
| (g) <i>Triticum aestivum</i> | (h) <i>Syperus rotundus</i> |



Practical Programme, 2014

Programme of B.Sc. Part-I Botany (Hons.),

Practical Counselling Class and Examination, 2014

Venue:- *Biology Lab,, 4th Floor, Biscomaun Bhawan, Patna*

(A) Practical Counselling Class

Date	Paper	Time
26.06.2014 to 27.06.2014	I & II	10:00 AM to 2:00 PM

(B) Practical Examination

Date	Time	Time	
	11.00 AM to 2.00 PM	2:30 PM to 5:30 PM	
28.06.2014	Paper-I	Paper-II	

Nalanda Open University
Annual Examination - 2014
B.Sc. Botany (Subsidiary), Part-I
Paper-I

Time: 3.00 Hrs.

Full Marks: 80

Answer any Five questions. All questions carry equal marks.

1. Describe, how bacteria are economically important.
2. Give an account of life cycle of *Ectocarpus*.
3. Describe the structure and reproduction of *Peziza*.
4. Give an account of reproduction of *Lichen*.
5. Describe the mode of reproduction in *Marchantia*.
6. What is stele? Describe the structure of stele in *Pteridophyte*.
7. Describe the development of male gametophyte of *Pinus*.

OR

Write short notes on any **Four** of the following :

- (a) Zoospore of *Oedogonium*
 - (b) Globule of *Chara*
 - (c) Zoospore of *Vaucheria*
 - (d) Saprophytes
 - (e) Teleutospore
 - (f) Gemma cup
8. Describe Hutchinson's twenty four principles for the purpose of classification of Angiosperms.
 9. Write the floral characters, floral formula and floral diagram of the family Euphorbiaceae.
 10. Write the meaning of any four of the following terms and assign them to their respective family.
 - (a) Apocarpous
 - (b) Zygomorphic
 - (c) Cyathium
 - (d) Didynamous
 - (e) Spikelet
 - (f) Verticillaster



Practical Programme, 2014

*Programme of B.Sc. Part-I Botany (Subsidiary),
Practical Counselling Class and Examination, 2014
Venue:- Biology Lab,, 4th Floor, Biscomaun Bhawan, Patna*

(A) Practical Counselling Class

<i>Date</i>	<i>Time</i>	<i>Batch</i>	<i>Honours</i>
03-07-2014	10:00 AM to 2:00 PM	B1	All Zoology, Geography and Home Science Honours
03-07-2014	2:00 PM to 6:00 PM	B2	All Physics, Mathematics and Chemistry Honours

(B) Practical Examination

<i>Date</i>	<i>Time</i>	<i>Batch</i>	<i>Honours</i>
04-07-2014	11:00 AM to 2:00 PM	B1	All Zoology, Geography and Home Science Honours
04-07-2014	2:30 PM to 5:30 PM	B2	All Physics, Mathematics and Chemistry Honours

Nalanda Open University

Annual Examination - 2014

B.Sc. Botany (Honours), Part-II

Paper-III

Time: 3.00 Hrs.

Full Marks: 80

Answer Five questions. Selecting atleast one question from each group A, B and C.

All questions carry equal marks.

Group - A (Microbiology)

1. Describe the detailed structure of a bacterial cell.
2. Give an account of the structure and life cycle of bacteriophage.
3. Describe the industrial importance of fungi.

Group - B (Plant Pathology)

4. What is the role of pathogen secreted enzymes in pathogenesis?
5. What do you mean by Prohibitins? Describe the role of Prohibitin in defence against pathogens in the host.
6. Describe the symptoms, etiology and control measures of loose smut of wheat.
7. Write in brief about four of the following:-
 - (a) Contribution of Robert Koch
 - (b) Transmission of TMV
 - (c) Mycotoxins
 - (d) Symptom of red rot of sugarcane
 - (e) Little leaf of brinjal
 - (f) Telentospore of *Melampsora*

Group - C (Embryology)

8. Describe megasporogenesis in Angiosperm.
9. Give an account of the development of embryo in dicot plant.
10. What is endosperm? Describe its origin, types and functions.



Examination Programme, 2014

(Bachelor Of Science (Part-II))

All Subjects Except B.Sc Geography & Home Science (Honours)

Date	Paper	Time	Name of Examination Centre
21/5/2014	HONOURS PAPER – III	3.30 to 6.30 pm	Nalanda Open University, Patna
23/5/2014	HONOURS PAPER – IV	3.30 to 6.30 pm	Nalanda Open University, Patna
27/5/2014	(SUB.) (Mathematics - II)	8.00 to 11.00 am	Nalanda Open University, Patna
28/5/2014	(SUB.) (Home Science- II)	12.00 to 3.00 pm	Nalanda Open University, Patna
29/5/2014	(SUB.) (Chemistry - II)	8.00 to 11.00 am	Nalanda Open University, Patna
30/5/2014	(SUB.) (Zoology - II)	8.00 to 11.00 am	Nalanda Open University, Patna
31/5/2014	Hindi 100 orUr 50+Hn50	3.30 to 6.30 pm	Nalanda Open University, Patna
02/6/2014	(SUB.) (Botany - II)	8.00 to 11.00 am	Nalanda Open University, Patna
02/6/2014	(SUB.) (Physics- II)	8.00 to 11.00 am	Nalanda Open University, Patna
04/6/2014	(SUB.) (Geography -II)	8.00 to 11.00 am	Nalanda Open University, Patna

Programme of B.Sc. Part-II Botany (Hons.),

Practical Counselling Class and Examination, 2014

Venue:- Biology Lab,, 4th Floor, Biscomaun Bhawan, Patna

(A) Practical Counselling Class

Date	Paper	Time
07.06.2014 to 09.06.2014	III & IV	10:00 AM to 2:00 PM

(B) Practical Examination

Date	Time	Time
	10.00 AM to 1.00 PM	1:30 PM to 4:30 PM
10.06.2014	Paper-III	Paper-IV

Nalanda Open University

Annual Examination - 2014

B.Sc. Botany (Honours), Part-II

Paper-IV

Time: 3.00 Hrs.

Full Marks: 80

Answer *Five* questions. Selecting atleast one question from each group A, B and C.

All questions carry equal marks.

Group - A (Anatomy)

1. What is mechanical tissue? Describe different types of mechanical tissue.
2. Describe the anatomical features of hydrophytes.
3. In what way does abnormal secondary growth differ from the normal secondary growth? Describe the abnormal secondary growth in *Boerhaavia*.

Group - B (Cell Biology)

4. Describe the detailed structure of mitochondria.
5. Describe the structure of DNA.
6. Give an account of carbohydrates with their function.
7. What are secondary metabolites? Discuss the role of secondary metabolites in plants.
8. Describe the mechanism of protein synthesis in prokaryotes.

Group - C (Economic Botany)

9. Give an account of oil yielding plants of Bihar State.
10. Write short notes on any *Four* of the following :-
 - (a) *Sarpagandha*
 - (b) *Adhatoda vasica*
 - (c) *Cereals*
 - (d) *Saccharum officinarum*
 - (e) *Abelmoschus esculentus*
 - (f) *Nicotiana tabacum*
 - (g) *Gossypium herbaceum*
 - (h) *Coriandrum sativum*

OR

Write the Botanical name of :-

- (i) three cereal yielding plants
- (ii) two fibre yielding plants
- (iii) three medicinal plants
- (iv) three spices yielding plants
- (v) three vegetable yielding plants
- (iv) two fruit yielding plants



Examination Programme, 2014

(Bachelor Of Science (Part-II))

All Subjects Except B.Sc Geography & Home Science (Honours)

Date	Paper	Time	Name of Examination Centre
21/5/2014	HONOURS PAPER – III	3.30 to 6.30 pm	Nalanda Open University, Patna
23/5/2014	HONOURS PAPER – IV	3.30 to 6.30 pm	Nalanda Open University, Patna
27/5/2014	(SUB.) (Mathematics - II)	8.00 to 11.00 am	Nalanda Open University, Patna
28/5/2014	(SUB.) (Home Science- II)	12.00 to 3.00 pm	Nalanda Open University, Patna
29/5/2014	(SUB.) (Chemistry - II)	8.00 to 11.00 am	Nalanda Open University, Patna
30/5/2014	(SUB.) (Zoology - II)	8.00 to 11.00 am	Nalanda Open University, Patna
31/5/2014	Hindi 100 orUr 50+Hn50	3.30 to 6.30 pm	Nalanda Open University, Patna
02/6/2014	(SUB.) (Botany - II)	8.00 to 11.00 am	Nalanda Open University, Patna
02/6/2014	(SUB.) (Physics- II)	8.00 to 11.00 am	Nalanda Open University, Patna
04/6/2014	(SUB.) (Geography -II)	8.00 to 11.00 am	Nalanda Open University, Patna

Programme of B.Sc. Part-II Botany (Hons.),

Practical Counselling Class and Examination, 2014

Venue:- Biology Lab,, 4th Floor, Biscomaun Bhawan, Patna

(A) Practical Counselling Class

Date	Paper	Time
07.06.2014 to 09.06.2014	III & IV	10:00 AM to 2:00 PM

(B) Practical Examination

Date	Time	Time
	10.00 AM to 1.00 PM	1:30 PM to 4:30 PM
10.06.2014	Paper-III	Paper-IV

Nalanda Open University
Annual Examination - 2014
B.Sc. Botany (Subsidiary), Part-II
Paper-II

Time: 3.00 Hrs.

Full Marks: 80

Answer Five questions. All questions carry equal marks.

1. What is anomalous secondary growth? Describe the anomalous secondary in *Amaranthus*.
2. Describe the microsporogenesis.
3. Describe the prophase I of meiosis.
4. Describe the structure of DNA.
5. What is crossing over? Discuss the various view to explain the mechanism of recombination.
6. Describe Calvin cycle.
7. What is nitrogen fixation? Describe biological nitrogen fixation.
8. Give an account of xerosere.
9. What is air pollution? Describe the sources of air pollution and suggest the methods of its control.
10. Write short notes on any **Four** of the following :-
 - (a) Sclerenchyma
 - (b) Nucleolus
 - (c) Cell cycle
 - (d) Significance of mutation
 - (e) Productivity
 - (f) Cereal



*Programme of B.Sc. Part-II, Botany (Subsidiary),
Practical Counselling Class and Examination, 2014
Venue:- Biology Lab, 4th Floor, Biscomaun Bhawan, Patna*

(A) Practical Counselling Class

<i>Date</i>	<i>Time</i>	<i>Subject</i>	<i>Roll No.</i>
12.06.2014	10.00 AM to 2.00 PM	Botany (Subsidiary)	All Students

(B) Practical Examination

<i>Date</i>	<i>Time</i>	<i>Subject</i>	<i>Roll No.</i>
14.06.2014	10.00 AM to 1.00 PM	Botany (Subsidiary)	All Students

Nalanda Open University
Annual Examination - 2014
B.Sc. Botany (Honours), Part-III
Paper-V (Physiology and Biochemistry)

Time: 3.00 Hrs.

Full Marks: 80

Answer any five questions. Questions No. 1 is compulsory. All questions carry equal marks.

1. Multiple choice questions :
 - (i) During osmosis which of the following side will lose water.
(a) Hypotonic (b) Hypertonic (c) Isotonic (d) None
 - (ii) Ion uptake is called active because :
(a) Ions are active (b) Ions move freely
(c) Ions move positively (d) Energy is spent
 - (iii) The process of transpiration helps in :
(a) Absorption of CO₂ from atmosphere (b) Opening of stomata
(c) Upward conduction of water (d) Absorption of O₂ from atmosphere
 - (iv) In C₄-pathway of CO₂ fixation, the first stable production is :
(a) Pyruvic acid (b) Oxaloacetic acid
(c) Phosphoglyceric acid (d) Phosphoenol pyruvic acid
 - (v) Krebs cycle takes place in :
(a) Ribosome (b) ER (c) Chloroplast (d) Mitochondria
 - (vi) How many ATP will be produced during the production of one molecule of Acetyl CoA from one molecule of Pyruvic acid :
(a) 3 (b) 6 (c) 8 (d) 38
 - (vii) Stimulation of cell division is mainly associated with :
(a) Gibberellins (b) Cytokinin (c) Vitamin (d) Auxin
 - (viii) Effect of daylight on flowering of a plant is known as :
(a) Photoperiodism (b) Phototropism
(c) Photorespiration (d) Chemotropism
2. Describe the fluid mosaic model of plasmamembrane.
3. Mention the process of absorption of water in land plant.
4. Give an account of Calvin cycle.
5. Write the steps in the formation of Pyruvic acid from glucose.
6. Describe the role of gibberellins in the physiology of plants.
7. Explain the different stages of Nitrogen cycle.
8. Discuss the physiological role of Nitrogen, Phosphorus, Potassium and Zinc.
9. What is Tropic movement? Describe the mechanism of phototropism.
10. Write notes on *any Two* of the following :-
 - (a) Carrier concept for the absorption of minerals
 - (b) Non-cyclic photophosphorylation
 - (c) Physiological effects of Cytokinins
 - (d) Measurement of the growth



Examination Programme-2014
B.Sc (Part-III)

Botany, Chemistry, Mathematics, Physics and Zoology (Honours)

Date	3.30 to 6.30 P.M.	Examination Centre
20/5/2014	Honours Paper-V	Nalanda Open University, Patna
22/5/2014	Honours Paper-VI	Nalanda Open University, Patna
24/5/2014	Honours Paper-VII	Nalanda Open University, Patna
26/5/2014	Honours Paper-VIII	Nalanda Open University, Patna
28/5/2014	Paper -XV (General Studies)	Nalanda Open University, Patna

For Practical Exam Programme Please See Back Page

Nalanda Open University
Annual Examination - 2014
B.Sc. Botany (Honours), Part-III
Paper-VI (Environmental Biology)

Time: 3.00 Hrs.

Full Marks: 80

Answer any Five questions. Questions No. 1 is compulsory. All questions carry equal marks.

1. Multiple choice questions :
 - (i) In which category will you place the phytoplanktons?
 (a) Decomposer (b) Producer (c) Consumers (d) None of these
 - (ii) Net primary productivity is equal to :
 (a) Gross primary productivity - Organic matter lost in respiration
 (b) Total amount produced by photosynthesis
 (c) Both of these
 (d) None of these
 - (iii) Nitrifying bacteria produce :
 (a) NH_3 to NO_3 (b) NO_3 to N_2
 (c) Protein to NH_3 (d) None of these
 - (iv) *Rhizophora* occurs in :
 (a) Jammu and Kashmir (b) Andamand and Nicobar
 (c) Central India (d) Alpine Zone
 - (v) Acid rain is formed due to the union of water with :
 (a) Dust (b) Nitrogen (c) Sulphur dioxide (d) Helium
 - (vi) Viviparous germination is found in :
 (a) Hydrophytes (b) Mesophytes (c) Halophytes (d) Xerophytes
 - (vii) Betla National Park is located at :
 (a) Orissa (b) Jharkhand (c) Andhra Pradesh (d) Bihar
 - (viii) Lloyd Botanical Garden is located at :
 (a) Barrackpore (b) Bolpur
 (c) Burdwan (d) Darjeeling
2. Explain biogeochemical cycle. Describe nitrogen cycle in nature. What is the main natural source of nitrogen in the crop plants?
3. What are the analytical character of community?
4. What are the sources of air pollution? How can the air pollution be checked?
5. Describe the characteristics of morphology, anatomy and physiology of xerophytic plants.
6. What is phytogeography? Describe major phytogeographical and floristic regions of India in brief.
7. What do you mean by biological diversity? Describe the methods of conservation of biological diversity.
8. What is social, forestry? Give an account of social forestry. How is it beneficial to the society?
9. Write notes on *any Two* of the following :-
 (a) Plant indicator (b) Green house effect
 (c) MAB programme (d) Depletion of Ozone layer
10. Describe the different categories of natural resources.



Examination Programme-2014
B.Sc (Part-III)

Botany, Chemistry, Mathematics, Physics and Zoology (Honours)

Date	3.30 to 6.30 P.M.	Examination Centre
20/5/2014	Honours Paper-V	Nalanda Open University, Patna
22/5/2014	Honours Paper-VI	Nalanda Open University, Patna
24/5/2014	Honours Paper-VII	Nalanda Open University, Patna
26/5/2014	Honours Paper-VIII	Nalanda Open University, Patna
28/5/2014	Paper -XV (General Studies)	Nalanda Open University, Patna

Nalanda Open University
Annual Examination - 2014
B.Sc. Botany (Honours), Part-III
Paper-VII (Cytogenetics and Molecular Biology)

Time: 3.00 Hrs.

Full Marks: 80

Answer any Five questions. Questions No. 1 is compulsory. All questions carry equal marks.

1. Multiple choice questions :
 - (i) The nucleus is separated from surrounding cyto-plasm by a nuclear membrane which is :
 - (a) Double and porous
 - (b) Double and non-porous
 - (c) Single and porous
 - (d) Single and non-porous
 - (ii) Chromosomes other than autosomes of a cell are :
 - (a) Plasmids
 - (b) Giant Chromosome
 - (c) Sex Chromosomes
 - (d) Episome
 - (iii) The number of chromosomes can increase or decrease due to :
 - (a) Genetic replication
 - (b) Non-disjunction
 - (c) Mutation
 - (d) All the above
 - (iv) Which is an example of Cytoplasmic inheritance?
 - (a) Height in pea
 - (b) Sterile pollen
 - (c) Flower colour in pea
 - (d) Eye colour in Drosophia
 - (v) Somatic cell division includes :
 - (a) Cytokinesis only
 - (b) Karyokinesis only
 - (c) Cytokinesis followed by Karyokinesis
 - (d) Karyokinesis followed by Cytokinesis
 - (vi) Double helix model of DNA was proposed by :
 - (a) Watson and Crick
 - (b) Hugo de Vries
 - (c) Fisher and Heldane
 - (d) Lamark and Darwin
 - (vii) DNA replication occurs during :
 - (a) S period
 - (b) G₁ period
 - (c) G₂ period
 - (d) Prophase
 - (viii) Extranuclear genes occur in :
 - (a) ER and Cytoplasm
 - (b) Mitochondria and Cytoplasm
 - (c) Cytoplasm only
 - (d) Cytoplasm and ribosome
2. What do you mean by mutation breeding? Describe the procedure of mutation breeding?
3. Describe meiosis I in details.
4. What is genetic code? Describe its nature and properties.
5. Explain chromosomal aberrations. Describe their different types in brief.
6. Give the detailed structure of nucleus.
7. What do you know about extranuclear inheritance in prokaryotes?
8. Define plant introduction and acclimatization. Describe their process.
9. Give an account of conservation of germ plasm.
10. Write notes on any **Two** of the following :-
 - (a) RNA
 - (b) Application of genetic engineering
 - (c) Crossing over
 - (d) Hybrid vigour



Examination Programme-2014
B.Sc (Part-III)

Botany, Chemistry, Mathematics, Physics and Zoology (Honours)

Date	3.30 to 6.30 P.M.	Examination Centre
20/5/2014	Honours Paper-V	Nalanda Open University, Patna
22/5/2014	Honours Paper-VI	Nalanda Open University, Patna
24/5/2014	Honours Paper-VII	Nalanda Open University, Patna
26/5/2014	Honours Paper-VIII	Nalanda Open University, Patna
28/5/2014	Paper -XV (General Studies)	Nalanda Open University, Patna

For Practical Exam Programme Please See Back Page

Nalanda Open University

Annual Examination - 2014

B.Sc. Botany (Honours), Part-III

Paper-VIII (Genetics)

Time: 3.00 Hrs.

Full Marks: 80

Answer any Five questions. Questions No. 1 is compulsory. All questions carry equal marks.

1. Multiple choice questions :
 - (i) The epistatic factor shows motivation ratio as :
(a) 12 : 3 : 1 (b) 9 : 6 : 1 (c) 9 : 3 : 4 (d) 15 : 1
 - (ii) The ration of 9 : 3 : 3 : 1 is modified due to inhibitory factor to :
(a) 13 : 3 (b) 15 : 1 (c) 9 : 6 : 1 (d) 12 : 3 : 1
 - (iii) The variation in individual chromosome number of an organism is :
(a) Euploidy (b) Aneuploidy (c) Polyploidy (d) Aberration
 - (iv) Additive factor or polymerism contains modified ration as :
(a) 9 : 6 : 1 (b) 1 : 4 : 6 : 4 : 1 (c) 9 : 3 : 4 (d) 12 : 3 : 1
 - (v) A trisomic individual has a chromosome number of :
(a) $2n - 1$ (b) $2n + 2$ (c) $2n + 1$ (d) $2n + 3$
 - (vi) Turner's syndrome is due to :
(a) Monosomy (b) Nullisomy (c) Trisomy (d) Tetrasomy
 - (vii) Restriction enzymes are found in :
(a) Virus (b) Amoeba (c) Bacteria (d) Liver cells
 - (viii) Which of the following technique is used by forensic laboratory in crime detection?
(a) DNA sequencing (b) DNA nicking
(c) DNA finger printing (d) Gene therapy
2. Explain lethal factors? How do they modify the monohybrid ration?
3. What is mutation? Discuss its role in crop improvement.
4. Define genetic code and describe the characteristics of genetic code.
5. Describe the different tools employed in genetic engineering.
6. Describe PCR methodology for gene amplification purpose.
7. Define genetic counselling. Describe its significance and role in human life.
8. Define interaction of gene. Explain the polygenic inheritance in wheat.
9. Write notes on any **Two** of the following :-
 - (a) m RNA (b) Turner's Syndrome
 - (c) DNA Bank (d) Wobble Hypothesis
10. Discuss the aims and findings of human genome project.



*Programme of B.Sc. Part-III Botany (Hons.),
Practical Counselling Class and Examination, 2014
Venue:- Biology Lab,, 4th Floor, Biscomaun Bhawan, Patna*

(A) Practical Counselling Class

<i>Date</i>	<i>Paper</i>	<i>Time</i>
29.05.2014 to 02.06.2014	V to VIII	10:00 AM to 2:00 PM

(B) Practical Examination

<i>Date</i>	<i>Time</i> <i>10.00 AM to 1.00 PM</i>	<i>Time</i> <i>1:30 PM to 4:30 PM</i>
03.06.2014	Paper-V	Paper-VI
04.06.2014	Paper-VII	Paper-VIII