

Nalanda Open University

Annual Examination - 2019

B.Sc. Zoology (Honours), Part-I

Paper-I

Time: 3.00 Hrs.

Full Marks: 80

Answer any Five questions. Question No. 1 is Compulsory. All questions are of equal value

- Multiple choice questions. (Each question carries **Two** marks).
 - Infective stage of Entamoeba histolytica is:
 - Uninucleate cyst
 - Tetranucleate cyst
 - Binucleate cyst
 - Penta nucleate cyst
 - Trocophore is the larva of:
 - Earthworm
 - Cockroach
 - Nereis
 - Lubricus
 - Movement of food vacuoles in paramecium along a definite path is called:
 - Exomixis
 - Cylosis
 - endomixis
 - None of the above.
 - Which is called sea pan?
 - Veella
 - Pennantula
 - Porpita
 - Adamsia
 - In the middle of scolex, which of the following structure is found?
 - Sucker
 - Proglottid
 - Tounge
 - Rostellum.
 - Which of the following is the excretory organ of prawn?
 - Coxal gland
 - Green gland
 - Malpighian tubular
 - Hepatopancreas.
 - Choanocytes are also known as:
 - Muscle cells
 - Collar cells
 - Nerve cells
 - Blood cells.
 - Microfilaria is the larva of:
 - Tapeworm
 - Pin worm
 - Round worm
 - Filarial Worm
- Give and account of life cycle of Entamoeba histolytica
- Describe the respiratory system of Unio.
- Describe the affinities of Balanoglossus.
- Give an account of Canal systems in sponges.
- What is alternation of generation? Explain with the reference of life cycle of Obelia.
- Describe the stages in the development of microfilariae in mosquito and mode of infection in human being.
- Describe the reproduction through transverse Binary fission.
- Describe the Haemocoelomic system of Leech.
- Write short notes on any **Two** of the following:
 - Bladder worm
 - Microfilaria
 - Polymorphism
 - Glochidium larva



B.Sc. Part-I Zoology (Hons.), Practical Counselling and Examination 2019

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

(A) Practical Counselling Class

Date	Papers	Time	Enrollment No.	Batches
16.06.2019	I & II	12.00 Noon to 06.00 PM	All Old Students & 180510001 to 180510065	Z-1
17.06.2019	I & II	11.00 AM to 05.00 PM	180510066 to 180510137	Z-2
18.06.2019	I & II	11.00 AM to 05.00 PM	180510138 to 180510202	Z-3

(B) Practical Examination

Date	Papers	Time	Enrollment No.	Batches
19.06.2019	I	11.00 AM to 02.00 PM	All Old Students & 180510001 to 180510065	Z-1
	II	02.30 PM to 05.30 PM		
20.06.2019	I	11.00 AM to 02.00 PM	180510066 to 180510137	Z-2
	II	02.30 PM to 05.30 PM		
21.06.2019	I	11.00 AM to 02.00 PM	180510138 to 180510202	Z-3
	II	02.30 PM to 05.30 PM		

Nalanda Open University
Annual Examination - 2019
B.Sc. Zoology (Honours), Part-I
Paper-II

Time: 3.00 Hrs.

Full Marks: 80

*Answer any **Five** questions. All questions are of equal value*

1. Describe abiotic and biotic component of fresh water ecosystem.
2. Describe carbon cycle with suitable example.
3. Write an essay on Vanishing Wild Life of India.
4. What is innate behavior? Discuss various kinds of innate behavior with suitable illustration.
5. What do you mean by Parental care? Discuss the parental care in Amphibians.
6. Describe various kinds of learnt behavior with suitable example.
7. Write an essay on Birds migration and explain, How they navigate?
8. Describe the life cycle of one pest of Paddy and its prevention and control.
9. Give an account of Pearl culture in India.
10. Write notes on **any two** of the following:
 - (a) Lotic ecosystem
 - (b) Greenhouse effect
 - (c) Rhinoceros
 - (d) Sedimentary cycle



B.Sc. Part-I Zoology (Hons.), Practical Counselling and Examination 2019

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

(A) Practical Counselling Class

<i>Date</i>	<i>Papers</i>	<i>Time</i>	<i>Enrollment No.</i>	<i>Batches</i>
16.06.2019	I & II	12.00 Noon to 06.00 PM	All Old Students & 180510001 to 180510065	Z-1
17.06.2019	I & II	11.00 AM to 05.00 PM	180510066 to 180510137	Z-2
18.06.2019	I & II	11.00 AM to 05.00 PM	180510138 to 180510202	Z-3

(B) Practical Examination

<i>Date</i>	<i>Papers</i>	<i>Time</i>	<i>Enrollment No.</i>	<i>Batches</i>
19.06.2019	I	11.00 AM to 02.00 PM	All Old Students & 180510001 to 180510065	Z-1
	II	02.30 PM to 05.30 PM		
20.06.2019	I	11.00 AM to 02.00 PM	180510066 to 180510137	Z-2
	II	02.30 PM to 05.30 PM		
21.06.2019	I	11.00 AM to 02.00 PM	180510138 to 180510202	Z-3
	II	02.30 PM to 05.30 PM		

Nalanda Open University
Annual Examination - 2019
B.Sc. Zoology (Subsidiary), Part-I
Paper-I

Time: 3.00 Hrs.

Full Marks: 80

Answer any Five questions. All questions are of equal value

1. Describe the structure and life-cycle of obelia.
2. Describe the detailed process of conjugation in paramecium.
3. Describe the structure and life-cycle of liver fluke.
4. Describe the reproductive organs of pheretima.
5. Describe the nervous system of pila-globosa.
6. Justify, how the water vascular system helps in the locomotion of starfish.
7. Describe the ultrastructure of an animal cell.
8. Describe the structure and function of mitochondria.
9. Describe the process of crossing over and mention its utility.
10. Write notes on *any two* of the following :-
 - (a) Green gland of Palaemon
 - (b) Bipinnaria Larva.
 - (c) Golgi Body
 - (d) Linkage.



Programme of B.Sc. Part-I Zoology (Subsidiary)
Practical Counselling Classes and Practical Exam 2019
Venue : 1st Floor, Zoology Lab, Biscomaun Tower, Patna
Paper-I (Subsidiary)

(A) Counselling Classes

<u>Date</u>	<u>Time</u>	<u>Paper</u>
25.06.2019	11:00 AM to 02:00 PM	All Student of Botany (Subsidiary) Paper-I

(B) Practical Examination

<u>Date</u>	<u>Time</u>	<u>Paper</u>
26.06.2019	09:00 AM to 11:00 AM	All Student of Botany (Subsidiary) Paper-I

Nalanda Open University
Annual Examination - 2019
B.Sc. Zoology (Honours), Part-II
Paper-III

Time: 3.00 Hrs.

Full Marks: 80

Answer any Five questions. All questions are of equal value.

1. What is retrogressive matamorphosis.?
2. Describe female urogenital system of scoliodon.
3. Describe distribution and affinities of prototheria.
4. Classify living reptiles up to orders giving characters and example.
5. Describe the process of respiration in Lebio-rahita.
6. Define neoteny and also explain environmental factors affecting neotery with significance.
7. Give an account of organs of respiration and their functions in Pigeon.
8. Write an essay on "origin and evolution of Chordate".
9. Describe systematic position, distribution and habitat of protopterus, Neoceratodus and Lepidosiren.
10. Write short notes on any **two** of the following:-
 - (a) Hyoid apparatus
 - (b) Contour Feather
 - (c) Syrinx
 - (d) Wheel organ of Amphioxus.



Examination Programme, 2019
(Bachelor of Science (Part-II))

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

(बी०एस०सी० भूगोल और गृह विज्ञान (ऑनर्स) को छोड़कर विज्ञान के सभी □नर्स विषय)

Date	Paper	Time	Name of Examination Centre
28/5/2019	HONOURS PAPER – III	12.00 to 3.00 pm	Nalanda Open University, Patna
30/5/2019	HONOURS PAPER – IV	12.00 to 3.00 pm	Nalanda Open University, Patna
01/6/2019	Hindi 100 or Ur 50+Hn 50	12.00 to 3.00 pm	Nalanda Open University, Patna
03/6/2019	(SUB.) (Botany- II)	8.00 to 11.00 am	Nalanda Open University, Patna
04/6/2019	(SUB.) (Mathematics - II)	8.00 to 11.00 am	Nalanda Open University, Patna
06/6/2019	(SUB.) (Chemistry - II)	8.00 to 11.00 am	Nalanda Open University, Patna
07/6/2019	(SUB.) (Physics - II)	8.00 to 11.00 am	Nalanda Open University, Patna
08/6/2019	(SUB.) (Zoology - II)	8.00 to 11.00 am	Nalanda Open University, Patna
11/6/2019	(SUB.) (Geography - II)	8.00 to 11.00 am	Nalanda Open University, Patna
13/6/2019	(SUB.) (Home Science- II)	8.00 to 11.00 am	Nalanda Open University, Patna

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

Practical Class and Practical Examination, 2019

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

(A) Practical Counselling Class

Date	Paper	Time
09.06.2019	III & IV	11.00 AM to 05.00 PM

(B) Practical Examination

Description of Batches for Practical Examination

Roll No.	Batch	Roll No.	Batch
All Old Students and 170510001 to 170510100	Z1	170510101 to 170510436	Z2

Practical Examination

Date	Batch	Time 11.00 AM to 02.00 PM	Time 02.30 PM to 05.30 PM
10.06.2019	Z1	Paper-III	Paper-IV
11.06.2019	Z2	Paper-III	Paper-IV

Nalanda Open University
Annual Examination - 2019
B.Sc. Zoology (Honours), Part-II
Paper-IV

Time: 3.00 Hrs.

Full Marks: 80

Answer any Five questions. All questions are of equal value.

1. Describe the mammalian heart in detail.
2. With the help of diagram describe the aortic arches in the class Mammalia.
3. What is cleavage? Comment upon the influence of Yolk on cleavage in different types of eggs.
4. Draw a Well Labelled diagram of hen's egg.
5. What is placenta? Describe the development of placenta and its functions in mammal.
6. Give an account of extra embryonic membrane in chick.
7. Give a comparative account of integument of frog and bird.
8. How brain of reptile differs from with the brain of mammal?
9. Give an account of kidney of bird and mammal.
10. Write notes on any two of the following:-
 - (a) Bicuspid Valve
 - (b) Madulla oblongata
 - (c) Blastula stage
 - (d) Sweet gland



Nalanda Open University, Patna
Programme of B.Sc. Part-II Zoology (Hons.),
Practical Class and Practical Examination, 2019
 Venue : 1st Floor, Zoology Lab, Biscomaun Tower, Patna
 (A) Practical Counselling Class

<i>Date</i>	<i>Paper</i>	<i>Time</i>
09.06.2019	III & IV	11.00 AM to 05.00 PM

(B) Practical Examination

Description of Batches for Practical Examination

Roll No.	Batch	Roll No.	Batch
All Old Students and 170510001 to 170510100	Z1	170510101 to 170510436	Z2

Practical Examination

<i>Date</i>	<i>Batch</i>	<i>Time 11.00 AM to 02.00 PM</i>	<i>Time 02.30 PM to 05.30 PM</i>
10.06.2019	Z1	Paper-III	<i>Paper-IV</i>
11.06.2019	Z2	Paper-III	<i>Paper-IV</i>

Nalanda Open University
Annual Examination - 2019
B.Sc. Zoology (Subsidiary), Part-II
Paper-II

Time: 3.00 Hrs.

Full Marks: 80

Answer any Five questions. All questions are of equal value.

1. Describe female urinogenital system of scoliodon.
2. Describe the digestive system of Herdmania.
3. Describe the systemetic position, habit, habitat and external features of a bony fish.
4. Describe the biting and swallowing mechanism of snakes.
5. Give an account of flight adaptalion in bird.
6. Describe the distribution and affinities of Metatherian.
7. Discuss the structure of various carbohydrates.
8. Which gland of the body in both exocrine and endocrine? Describe its endocrine part and the hormones secreted by them.
9. Describe the structure and function of Adrenal gland.
10. Write notes on any two of the following:
 - (a) Addison's disease.
 - (b) Gigantism
 - (c) Hypoxia
 - (d) Placoid scale



Programme of B.Sc. Part-II Zoology (Subsidiary)
Practical Class and Examination, 2019
Venue:- 1st Floor, Zoology Lab Biscomaun Tower, Patna
(A) Practical Counselling Class

<i>Date</i>	<i>Time</i>	<i>Paper</i>
16.06.2019	09.00 A.M. to 12.00 Noon	All students of Zoology (Subsi.) Paper-II

(B) Practical Examination

<i>Date</i>	<i>Time</i>	<i>Paper</i>
18.06.2019	09.00 AM to 11.00 AM	All students of Zoology (Subsi.) Paper-II

Nalanda Open University
Annual Examination - 2019
B.Sc. Zoology (Honours), Part-III
Paper-V

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. (Each question carries Two marks)
 - (i) Pace maker influences:

(a) Contraction	(b) Heart beat rate
(c) Blood flow in heart	(d) Contraction of heart muscles
 - (ii) Non-reducing Sugar is:

(a) Maltose	(b) Glucose
(c) Lactose	(d) Sucrose
 - (iii) Keratin protein is found in:

(a) Blood	(b) Brain
(c) Hair	(d) Bone
 - (iv) Ultrafiltration occurs in:

(a) Glomerulus	(b) Renal tubules
(c) urinary bladder	(d) Blood capillaries
 - (v) The main function of Kidney is:

(a) Passive absorption	(b) ultrafiltration
(c) Selective reabsorption	(d) Both (b) & (c)
 - (vi) Which of the blood group is universal doner?

(a) Group 'A'	(b) Group 'B'
(c) Group 'AB'	(d) Group 'O'
 - (vii) Excretory organs have evolved to excrete mainly

(a) Water	(b) urea and water
(c) Salts	(d) Nitrogenous wastes
 - (viii) Vitamin D is absorbed in:

(a) Small intestine	(b) Large intestine
(c) stomach	(d) Pancreas.
2. What are different Kinds of vitamins? Mention their functions.
3. Describe the biochemical Changes that take place in muscle contraction and relaxation.
4. Give an account of β -oxidation of fatty acids.
5. Give an account of Lung ventilation in mammal.
6. Give an account of Cardiac cycle.
7. Give an account of structure and function of Nephron.
8. What are amino acids? Classify these.
9. Discuss how carbohydrates are digested and absorbed in a typical mammal.
10. Write notes on any **Two** of the following:

(a) Pacemaker	(b) Nephron
(c) Pancreas	(d) Cardiac output.



Examination Programme-2019
B.Sc (Part-III) Zoology Honours

Date	Papers	Time	Examination Centre
09/4/2019	Honours Paper-V	8.00 to 11.00 pm	Nalanda Open University, Patna
12/4/2019	Honours Paper-VI	8.00 to 11.00 pm	Nalanda Open University, Patna
13/4/2019	Honours Paper-VII	8.00 to 11.00 pm	Nalanda Open University, Patna
15/4/2019	Honours Paper-VIII	8.00 to 11.00 pm	Nalanda Open University, Patna
17/4/2019	Paper -XV (General Studies)	8.00 to 11.00 pm	Nalanda Open University, Patna

Nalanda Open University
Annual Examination - 2019
B.Sc. Zoology (Honours), Part-III
Paper-VI

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. (Each question carries two marks)
 - (i) Ribosome was discovered by:

(a) Bovari	(b) Porter
(c) Kollinker	(d) Palade.
 - (ii) The site of cholesterol synthesis is :

(a) Nucleus	(b) Golgi body	(c) Mitochondria
(d) Endoplasmic reticulum.		
 - (iii) Mutation which alter the chemical structure of genes at molecular level is known as :

(a) Chromosomal mutation	(b) Lethal mutation
(c) Point mutation	(d) Reverse mutation.
 - (iv) Enzymes are synthesized in the cell by :

(a) mitochondria	(b) Lysosome
(c) Golgicomplex	(d) Ribosome
 - (v) Lysosomal was discovered by:

(a) Palade	(b) Robertson
(c) de-duve	(d) de-vries.
 - (vi) Which of the following organ is vestigial organ in man.

(a) Spleen	(b) Coelia	(c) Islet of langerhans	(d)
------------	------------	-------------------------	-----

Appendix.
 - (vii) Polyploidy means occurrence of:

(a) Haploid set of Chromosomes	(b) Diploid set of chromosome
(c) more than two sets of Chromosome	(d) None of above.
 - (viii) The queen honeybee is :

(a) haploid	(b) diploid	(c) tetraploid	(d) triploid.
-------------	-------------	----------------	---------------
2. Describe the role played by endoplasmic reticulum in cell secretion.
3. Write an essay on mutation.
4. Give an account of DNA replication.
5. Write an essay on Parthenogenesis.
6. Describe Linkage and Crossing over.
7. Give an account of structure of RNA and its functions.
8. Describe Mendel's Law of inheritance.
9. Describe the ultra structure of Mitochondria and discuss its functions.
10. Write notes on *any Two* of the following:

(a) Phenotype	(b) Passive transport.
(c) Lysosome	(d) Kappa particle.



Programme of B.Sc. Part-III Zoology (Hons.)
Annual Practical Counselling & Practical Examination - 2019
 Venue : 1st Floor Biology Lab, Biscomaun Tower, Patna - 800 001

(A) Practical Counselling Zoology

Date	Time	Paper
18.04.2019	11.00 AM to 05.30 PM	V and VI
20.04.2019	11.00 AM to 05.30 PM	VII and VIII

(B) Practical Examination Zoology

Date	Time	
	11:00 AM to 2:00 PM	2:30 PM to 5:30 PM
22.04.2019	Paper-V	Paper-VI
24.04.2019	Paper-VII	Paper-VIII

Nalanda Open University

Annual Examination - 2019

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

Paper-VII

Time: 3.00 Hrs.

Full Marks: 80

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

1. Multiple choice questions. (Each question carries Two marks)
 - (i) Egg is fertilized but zygote is unviable due to:
 - (a) Genetic mortality
 - (b) zygote mortality
 - (c) Hybrid in viability
 - (d) Hybrid sterility
 - (ii) Human evolution originated in:
 - (a) Africa
 - (b) Java
 - (c) China
 - (d) France
 - (iii) India falls under:
 - (a) Ethiopian region
 - (b) Palartic region
 - (c) Oriental region
 - (d) Australian region
 - (iv) Isolation of segment of population may result in:
 - (a) Their extinction
 - (b) Inbreeding
 - (c) Dominance
 - (d) Outbreeding
 - (v) Lamarck was best known for his theory of:
 - (a) Independent assortment of chromosome selection
 - (b) Evolution through natural
 - (c) Inheritance of acquired characters
 - (d) All the above
 - (vi) The "Use and disuse" principle was proposed by:
 - (a) Hugode-vries
 - (b) Lamark
 - (c) Weismann
 - (d) Darwin
 - (vii) Overproduction of individual will lead to:
 - (a) Survival
 - (b) Struggle
 - (c) Increase in fitness
 - (d) Mutation.
2. Describe evolution of horse.
3. Discuss role of isolation in evolution. Describe reproductive isolation.
4. Describe characteristics of fauna of Ethiopian region.
5. Give an account of general peculiarities of oceanic Island.
6. Give an account of oriental region.
7. Write about various kinds and causes of variation.
8. Describe Neo-Darwinism.
9. Describe variation with suitable examples.
10. Write notes on any *Two* of the following:
 - (a) Mesozoic area
 - (b) Gorilla
 - (c) Hybrid Sterility
 - (d) Independent assortment of chromosome.



Programme of B.Sc. Part-III Zoology (Hons.)

Annual Practical Counselling & Practical Examination - 2019

Venue : 1st Floor Biology Lab, Biscomaun Tower, Patna - 800 001

(A) Practical Counselling Zoology

Date	Time	Paper
18.04.2019	11.00 AM to 05.30 PM	V and VI
20.04.2019	11.00 AM to 05.30 PM	VII and VIII

(B) Practical Examination Zoology

Date	Time	
	11:00 AM to 2:00 PM	2:30 PM to 5:30 PM
22.04.2019	Paper-V	Paper-VI
24.04.2019	Paper-VII	Paper-VIII

Nalanda Open University
Annual Examination - 2019
B.Sc. Zoology (Honours), Part-III
Paper-VIII

Time: 3.00 Hrs.

Full Marks: 80

Answer any Five questions. All questions carry equal marks.

1. Describe the structure and functions of Pituitary gland.
2. Describe Chi-square test.
3. Describe the histology of Adrenal gland and also discuss the function of different hormones secreted by the gland.
4. Describe the concept of census.
5. Describe the merit and demerits of Arithmetic mean.
6. Describe the different methods of Sampling.
7. Describe the different methods to determine the age of fossils.
8. Describe the characteristics of fauna of cenozoic era.
9. Describe the role of Bio-statistics in Biology.
10. Write notes on any two of the following:
 - (a) Mesozoic era
 - (b) Structure of testis
 - (c) Thyroxine
 - (d) Student-t-test



Programme of B.Sc. Part-III Zoology (Hons.)
Annual Practical Counselling & Practical Examination - 2019
Venue : 1st Floor Biology Lab, Bismaun Tower, Patna - 800 001

(A) Practical Counselling Zoology

<i>Date</i>	<i>Time</i>	<i>Paper</i>
18.04.2019	11.00 AM to 05.30 PM	V and VI
20.04.2019	11.00 AM to 05.30 PM	VII and VIII

(B) Practical Examination Zoology

<i>Date</i>	<i>Time</i>	
	<i>11:00 AM to 2:00 PM</i>	<i>2:30 PM to 5:30 PM</i>
22.04.2019	Paper-V	Paper-VI
24.04.2019	Paper-VII	Paper-VIII