

This question paper contains **2** printed pages]

NEPKR—01—2026

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (NEP) (First Year) (First Semester) EXAMINATION

APRIL/MAY, 2026

RESEARCH METHODOLOGY (Compulsory)

Paper NEPRM-1001

(Thursday, 16-4-2026)

Time : 10.00 a.m. to 12.00 noon

Time—2 Hours

Maximum Marks—45

N.B. :— (1) Question No. 1 is compulsory.

(2) Solve any *two* questions from Q. No. 2 to Q. No. 5.

(3) Calculator and log table is allowed.

1. Write notes on :

5×3=15

(a) Research motive

(b) Need of research design

(c) Coding processing operation

(d) Statistical techniques in research

(e) Variables.

P.T.O.

2. (a) Explain in detail various steps involved in research process. 8
- (b) What is research hypothesis ? Give their characteristics. 7
3. (a) Give an account on good research design. 8
- (b) Describe types of research. 7
4. (a) Calculate the mean, median and mode of the following data : 8
- 3, 6, 3, 7, 4, 3, 9.
- (b) Describe interview method for the collection of primary data. 7
5. (a) Calculate the chi-square (χ^2) value of the following data : 8

Fully Agree	Not Sure	Not Agree	Total
102	108	28	238

- (b) Write an essay on case study. 7

This question paper contains 2 printed pages]

NEPKR—97—2026

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (First Year) (First Semester) EXAMINATION

APRIL/MAY, 2026

ZOOLOGY

SZOOC-401

(Invertebrate Structure and Function)

(Saturday, 18-4-2026)

Time : 10.00 a.m. to 12.30 p.m.

Time—2½ Hours

Maximum Marks—60

N.B. :— (1) Question No. 1 is compulsory.

(2) Solve any *three* questions out of Q. No. 2 to Q. No. 6.

(3) Each question carries **15** marks.

1. Write short notes on the following :

15

(a) Protostomia

(b) Trachea as a respiratory organ in invertebrates

(c) Osmoregulation

(d) General characters of minorphyla

(e) Respiratory pigments in invertebrates.

P.T.O.

2. Describe locomotion in Annelida. 15
3. Describe patterns of feeding and digestion in lower metazoa. 15
4. Describe nervous system of Echinodermata. 15
5. Describe larval forms of Annelida. 15
6. Solve any *three* of the following : 15
 - (a) Ciliary locomotion in protozoa
 - (b) Filter feeding in mollusca
 - (c) Malphigian tubules
 - (d) Larval forms of echinodermata.

This question paper contains **2** printed pages]

NEPKR—198—2026

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (NEP) (First Year) (First Semester) EXAMINATION

APRIL/MAY, 2026

ZOOLOGY

Paper—SZOOC-402

(Biosystematics, Taxonomy and Evolution)

(Tuesday, 21-4-2026)

Time : 10.00 a.m. to 12.30 p.m.

Time—2½ Hours

Maximum Marks—60

N.B. :— (i) Question No. **1** is compulsory.

(ii) Out of remaining 5 questions (Q. No. **2** to Q. No. **6**) answer any **3** questions.

(iii) *All* questions carry equal marks.

(iv) Illustrate your answers with suitable labeled diagrams, wherever necessary.

1. Answer each of the following : 15

(a) Give a brief account of Trends in Biosystematics.

(b) Give a brief account of taxonomic procedures.

P.T.O.

- (c) Give an account on economic importance of biodiversity.
- (d) Explain the Lamarck's theory of Organic evolution.
- (e) Write a brief note on Species concept.
2. Give a brief account of the historical resume of Systematics. 15
3. What are taxonomic keys ? Describe different types of taxonomic keys. 15
4. Describe in detail salient features of International Code of Zoological Nomenclature. 15
5. Explain Darwin's theory of Natural Selection. Add a note on Neo-Darwinism. 15
6. Answer any *three* of the following : 15
- (a) Describe the importance and application of Biosystematic in biology.
- (b) Write a note on Taxonomic Paper.
- (c) Describe the methods of conservation of biodiversity.
- (d) Describe bottleneck and founder effects.

This question paper contains **2** printed pages]

NEPKR—338—2026

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (First Year) (First Semester) EXAMINATION

APRIL/MAY, 2026

(NEP-2020)

ZOOLOGY

SZOOCT-403

(Economic Zoology and Animal Behaviour)

(Thursday, 23-4-2026)

Time : 10.00 a.m. to 12.30 p.m.

Time—2½ Hours

Maximum Marks—60

- N.B. :-** (i) Question Number **1** is compulsory.
(ii) Out of remaining **5** questions (Q. No. **2** to Q. No. **6**) answer any **3** questions.
(iii) *All* questions carry equal marks.
(iv) Illustrate your answers with suitable labelled diagrams, wherever necessary.

1. Answer each of the following : 15
- (a) Describe in brief the forensic importance of Arthropods.
(b) Write a brief note on Apuculture.
(c) Give an account of Sleep Drive.
(d) Give an account of courtship in animals.
(e) Give a brief account of mosquitoes as Vector of Human Diseases.

P.T.O.

2. Give an account of the bionomics, Prevention and control of *Trypanosoma*.
15
3. Describe the life cycle of Silkworm. Add a note on its economic impotence.
15
4. Describe different types of innate animal behaviour. 15
5. Describe in detail parental care in fishes. 15
6. Answer any *three* of the following : 15
 - (a) Give a brief note on *Taenia saginata*.
 - (b) Give a brief account of Stocking Pond.
 - (c) Give an account of Thrust Drive.
 - (d) Give a brief account of Aggressive behaviour in animal.

This question paper contains 2 printed pages]

NEPKR—49—2026

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (First Year) (Second Semester) EXAMINATION

APRIL/MAY, 2026

(NEP-2020 Pattern)

ZOOLOGY

Paper SZOOC1451

(Animal Ecology, Toxicology and Environmental Pollution)

(Friday, 17-4-2026)

Time : 10.00 a.m. to 12.30 p.m.

Time—2½ Hours

Maximum Marks—60

N.B. :- (1) Question No. 1 is compulsory.

(2) Out of remaining five questions (Q. No. 2 to Q. No. 6) answer any *three* questions.

(3) *All* questions carry equal marks.

(4) Illustrate your answers with suitable labelled diagram, wherever necessary.

1. Answer each of the following :

15

(a) Describe in detail the components of Ecosystem.

P.T.O.

- (b) Describe in brief Water Cycle.
- (c) Give an account of Toxic inorganic and organic compounds.
- (d) Give a brief account on Water pollution and diseases.
- (e) Write a note on Shelford's Law of Tolerance.
2. Define ecosystem. Discuss in detail the energy flow in an ecosystem. 15
3. What is Bio-geochemical cycle ? Describe Carbon cycle in an ecosystem. 15
4. Give an account of sources, effects and control of soil pollution. 15
5. Describe in brief the sources, effects and control of noise pollution. 15
6. Answer any *three* of the following : 15
- (a) Write a note on Desert Adaptation.
- (b) Describe the important characteristics of population.
- (c) Write a note on Common Toxic manifestations.
- (d) Write a note on Environment Protection Act, 1986.

This question paper contains 2 printed pages]

NEPKR—148—2026

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (First Year) (Second Semester) EXAMINATION

APRIL/MAY, 2026

(NEP-2020 Pattern)

ZOOLOGY

Paper SZOOC-452

(Gamete Biology and Animal Development)

(Monday, 20-4-2026)

Time : 10.00 a.m. to 12.30 p.m.

Time—2½ Hours

Maximum Marks—60

N.B. :— (1) Question No. 1 is compulsory.

(2) Out of remaining 5 questions (Q. No. 2 to Q. No. 6) answer any *three* questions.

(3) *All* questions carry equal marks.

(4) Illustrate your answers with suitable labelled diagrams, wherever necessary.

1. Answer each of the following :

15

(a) Describe the composition and formation of Human Semen.

P.T.O.

- (b) Explain in brief Embryonic Stem Cells.
 - (c) Describe in brief the process of Blastulation in Chick.
 - (d) Discuss the process of metamorphosis in Insect.
 - (e) Describe in brief the process of spermatogenesis.
2. What is oogenesis ? Describe in brief the process of oogenesis. 15
3. Describe in brief superovulation and embryo transfer technology. 15
4. Describe in detail the structure of hen's egg and explain the function of its various parts. 15
5. Give an account of the process of regeneration in invertebrates. 15
6. Answer any *three* of the following : 15
- (a) Give a brief account of Semen deficiencies.
 - (b) Write a note on Embryo Sexing.
 - (c) Describe the development of Foetal membranes in chick.
 - (d) Explain in brief the Hormonal control of Amphibian metamorphosis.

This question paper contains 2 printed pages]

NEPKR—250—2026

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (First Year) (Second Semester) EXAMINATION

APRIL/MAY, 2026

(NEP-2020 Pattern)

ZOOLOGY

Paper-SZOOCT-453

(Biochemistry & Immunology)

(Wednesday, 22-4-2026)

Time : 10.00 a.m. to 12.30 p.m.

Time—2.30 Hours

Maximum Marks—60

N.B. :— (i) Question No. 1 is compulsory.

(ii) Out of remaining 5 questions (Q. No. 2 to Q. No. 6) answer any 3 questions.

(iii) All questions carry equal marks.

(iv) Illustrate your answers with suitable labeled diagrams, wherever necessary.

1. Answer each of the following :

15

(a) Write a note on properties of proteins.

(b) Write a note on ketone bodies.

P.T.O.

- (c) Describe the functions of immunoglobulin.
- (d) Give a brief account of Anaphylactic Hypersensitivity.
- (e) Describe the process of Glycogenesis.
2. Describe the different steps involved in the process of Glycolysis. 15
3. Explain in brief the phenomenon of β oxidation pathway. 15
4. What is immunity ? Explain in detail innate immunity with suitable examples. 15
5. Explain various autoimmune diseases with suitable examples. 15
6. Answer any *three* of the following : 15
- (a) Describe the properties of lipids.
- (b) Explain in detail the process of deamination.
- (c) Explain the antigen-antibody interaction.
- (d) Write a note on functions of cytokines.

This question paper contains 2 printed pages]

NEPKR—98—2026

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (Second Year) (Third Semester) EXAMINATION

APRIL/MAY, 2026

ZOOLOGY

Paper SZOOCT-502

(Molecular Cell Biology)

(Saturday, 18-4-2026)

Time : 2.00 p.m. to 5.00 p.m.

Time—Three Hours

Maximum Marks—80

N.B. :— (i) Q. No. 1 is compulsory.

(ii) Out of remaining 5 questions (Q. No. 2 to Q. No. 6) answer any *three* questions.

(iii) *All* questions carry equal marks.

(iv) Illustrate your answers with suitable labelled diagrams wherever necessary.

1. Answer each of the following :

20

(a) Myosin as microfilament

(b) DNA Damage

(c) Structure of mRNA in Prokaryotes

(d) Apoptosis.

P.T.O.

2. (a) Describe the phases of cell cycle. 10
- (b) Describe Microtubule Organizing Centers (MTOCs). 10
3. (a) Explain regulation of Gene expression in Eukaryotes. 10
- (b) Give an account of Replication of DNA. 10
4. (a) Give an account of Operon Concept. 10
- (b) Explain in brief process of Protein Synthesis. 10
5. (a) Explain the process of signaling by insulin receptors. 10
- (b) Explain the types, characters and mechanisms of carcinogenesis. 10
6. Answer each of the following : 20
- (a) Structure of Microtubule
- (b) Satellite DNA
- (c) Genetic Code
- (d) Role of Nitric Oxide (NO) as cellular messengers.

This question paper contains **2** printed pages]

NEPKR—199—2026

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (Second Year) (Third Semester) EXAMINATION

APRIL/MAY, 2026

(NEP-2020 Pattern)

ZOOLOGY

Paper—SZOOC-503

(Applied Zoology—Microbes, Arthropods and Protozoans of Medical
Importance)

(Tuesday, 21-4-2026)

Time : 2.00 p.m. to 5.00 p.m.

Time—2½ Hours

Maximum Marks—60

N.B. :— (i) Question No. 1 is compulsory.

(ii) Out of remaining 5 questions (Q. No. 2 to Q. No. 6) answer any
3 questions.

(iii) All questions carry equal marks.

(iv) Illustrate your answers with suitable labelled diagrams, wherever
necessary.

1. Answer any *three* of the following : 15

(a) Give an account on Cholera.

(b) Give a brief account of Parasitic Mites.

(c) Give a brief account of Locomotion in Protozoa.

(d) Give an account *Giardia lamblia*.

P.T.O.

2. (a) Give an account of Pathogenesis of Dengue and explain prevention and control of Dengue. 8
- (b) Give an account of causative organism and pathogenesis of Plague. Add a note on prevention and control of Plague. 7
3. (a) Give an account of morphology of parasitic Ticks and explain their medical importance. 8
- (b) Describe the Morphology, Life Cycle, Diseases and Control Measures of Bed Bug (*Cimex lecturalis*). 7
4. (a) Give a brief account of the various types of parasites and hosts. 8
- (b) Give an account of Morphology, Life cycle and pathogenicity of *Entamoeba histolytica*. 7
5. (a) Describe the Morphology, Life cycle and Pathogenicity of *Trypanosoma gambiense*. 8
- (b) Give an account of Morphology, Life cycle and pathogenicity of *Trichomonas vaginalis*. 7
5. Answer any *three* of the following : 15
- (a) Give an account on viral respiratory disease COVID-19
- (b) Write a note on Control of Mosquitoes
- (c) Give an account of *Entamoeba coli*
- (d) Give a brief account of *Nyctotherus*.

This question paper contains **3** printed pages]

NEPKR—342—2026

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (Second Year) (Third Semester) EXAMINATION

APRIL/MAY, 2026

(NEP Pattern)

ZOOLOGY

Paper SZOOET-501-D

(Animal Physiology-I)

(Thursday, 23-4-2026)

Time : 2.00 p.m. to 4.30 p.m.

Time— 2½ Hours

Maximum Marks—60

N.B. :— (i) Question No. 1 is compulsory.

(ii) Out of remaining 5 questions (Q. No. 2 to Q. No. 6), answer any *three* questions.

(iii) *All* questions carry equal marks.

(iv) Illustrate your answer with suitable labelled diagrams, wherever necessary.

P.T.O.

1. Answer any *three* of the following : 15
- (a) Functional properties of nerve fibre.
 - (b) Types of exercises.
 - (c) Permeability of plasma membrane.
 - (d) Redox potential.
2. (a) Define Homeostasis. Explain in detail physiology of homeostatic mechanism with suitable example. 8
- (b) Give an account of ultrastructure of synapse and synaptic transmission. 7
3. (a) Explain in detail account on physiological disorders at high altitude with suitable examples. 8
- (b) Describe in detail Yoga, meditation and their benefits. 7
4. (a) Describe in detail origin, structure, organization and composition of Eukaryotic cells. 8
- (b) What is energy metabolism ? Explain methods for determination of energy output. 7
5. (a) Describe in detail enzymes used in recombinant DNA technology. 8
- (b) Explain in detail oxidative phosphorylation. 7

6. Answer any *three* of the following :

15

- (a) Acetylcholinesterase
- (b) SCUBA diving
- (c) Osmosis
- (d) LDH

Total No. of Printed Pages:02

SUBJECT CODE NO- NEPKR-45-2026
FACULTY OF SCIENCE AND TECHNOLOGY
EXAMINATION SUMMER 2026
M.SC. (SECOND YEAR) (SEM-IV)
RESEARCH PUBLICATION ETHICS
NEPRPE-1002

[Time: 2:00 Hours]

[Max. Marks:40]

“Please check whether you have got the right question paper.”

- N.B. (i) Question No. 1 is compulsory.
(ii) Solve any three questions from Question number 2 to 6

Q1. Write note on:

10

- a) Scope of philosophy.
- b) Principles of good scientific practices.
- c) Objective of publishing paper.
- d) Open access publication.
- e) International standard book number.

Q2. a) Write briefly on any two branches of philosophy.

5

b) Explain common form of scientific misconduct.

5

Q3. a) What constitute a violation of publication ethics?

5

b) Mention various steps of Sherpa Romeo online resource to view detail of journal.

5

Q4. a) What are the characteristics of predatory journals?

5

b) What is i_{10} index? calculate the i_{10} index of following citation.

5

Rank	Citation
1	29
2	26
3	15
4	14
5	12
6	11
7	11
8	09
9	06

- Q5.** a) Define publication ethics. Discuss unethical practices prevalent in research publications. **5**
b) What is plagiarism? Explain its types and importance in research. **5**

Q6. Explain:

- a) Types of ethics. **10**
b) Salami slicing
c) Elsevier
d) Turnitin

This question paper contains 3 printed pages]

NEPKR—149—2026

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (Second Year) (Fourth Semester) EXAMINATION

APRIL/MAY, 2026

(NEP-2020 Pattern)

ZOOLOGY

Paper SZOOC-551

(Mammalian Endocrinology)

(Monday, 20-4-2026)

Time : 2.00 p.m. to 5.00 p.m.

Time—3 Hours

Maximum Marks—80

N.B. :- (1) Question No. 1 is compulsory.

(2) Out of remaining 5 questions (Q. No. 2 to Q. No. 6) answer any *three* questions.

(3) *All* questions carry equal marks.

(4) Illustrate your answers with suitable labelled diagrams, wherever necessary.

1. Answer each of the following :

20

(a) Describe in brief Feedback mechanism of hormone.

P.T.O.

- (b) Give an account of Glucocorticoids.
- (c) Give an account role of Local hormone.
- (d) Explain the Male and Female Contraceptives and their mode of functioning.
2. (a) Give an account of chemical nature and classification of Hormones. 10
- (b) Describe the histological structure of mammalian Pituitary Gland. Add a note on hormones secreted by Pituitary Gland. 10
3. (a) Describe the histological structure of Adrenal gland. Add a note on hormones of adrenal medulla. 10
- (b) Describe the endocrine role of pancreatic hormones and their physiological significance. 10
4. (a) Give an account of the endocrine role of Pineal Gland. 10
- (b) Describe different hormones produced by Gastrointestinal Tract and mention their functions. 10
5. (a) Give a detailed account of the hormones and their functions in the male reproductive physiology. 10

- (b) Explain the causes of infertility in humans and describe the possible remedial measures. 10
6. Answer each of the following : 20
- (a) Give a brief account of Hypothalmo-Hypophyseal Portal System.
- (b) Explain in brief Disorders of Adrenal steroid hormones.
- (c) Describe the structure and histology of parathyroid gland.
- (d) Give a brief account of parturition and lactation.

This question paper contains 2 printed pages]

NEPKR—251—2026

FACULTY OF SCIENCE & TECHNOLOGY

M.Sc. (Second Year) (Fourth Semester) EXAMINATION

APRIL/MAY, 2026

(NEP-2020 Pattern)

ZOOLOGY

Paper SZO OCT552

(Genetics and Genetic Engineering)

(Wednesday, 22-4-2026)

Time : 2.00 p.m. to 5.00 p.m.

Time—3 Hours

Maximum Marks—80

N.B. :— (i) Question No. 1 is compulsory.

(ii) Out of remaining 5 questions (Q. No. 2 to Q. No. 6) answer any 3 questions.

(iii) All questions carry equal marks.

(iv) Illustrate your answers with suitable labelled diagrams, wherever necessary.

1. Answer each of the following :

20

(a) Describe inhibitory factor with suitable example.

(b) Describe complete linkage with suitable example.

(c) Give an account on Cri-du-chat syndrome.

(d) Give an account on Gel Electrophoresis.

P.T.O.

2. (a) Describe various methods of sex determination in animals. 20
- (b) Discuss in detail law of dominance and law of segregation.
3. (a) Define gene mutation. Discuss various mutagenic agents. 20
- (b) What is Rh factor ? Describe erythroblastosis foetalis with possible preventive measures.
4. (a) Define numerical chromosomal abnormality. Describe any *two* syndromes related to numerical chromosomal abnormalities. 20
- (b) Explain in detail polygenic inheritance in Cob length in maize and skin colour in man.
5. (a) Define *rDNA* technology. Describe various enzymes used in *rDNA* technology. 20
- (b) Describe in detail applications of *rDNA* technology.
6. Answer each of the following : 20
- (a) Describe complementary gene factors with suitable example.
- (b) Describe inversion type of chromosomal mutation.
- (c) Give an account on phenylketonuria.
- (d) Describe the plasmid DNA.