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

NEPSST—1—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP 2020)

RESEARCH METHODOLOGY

Paper NEPRN-1001

(Wednesday, 16-4-2025) **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*) Of the remaining solve any *three* questions.

(*iii*) Calculator and log table is allowed.

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

(*a*) Qualities of good research.

(*b*) Features of good design.

(*c*) ANOVA

(*d*) Types of data.

2. (*a*) What is research ? Explain steps involved in research process. 8

(*b*) Discuss interview as a technique of data collection. 7

P.T.O.

3. (*a*) Calculate the Mean, Median and Mode of the following data : 8

Class Interval (CI)	**Frequency (F)**
50–54	2
45–49	5
40–44	8
35–39	7
30–34	10
25–29	5
20–24	9
15–19	2
10–14	1
5–9	1

(*b*) What is hypothesis ? Give the characteristics of good research hypothesis. 7

4. (*a*) Describe non-probability and probability sampling. 8

(*b*) Calculate the Chi-square value of the following data : 7

Excellent	Average	Poor	Total
58	32	30	120

5. (*a*) Define case study. Give their components. 8

(*b*) Explain extraneous variable. 7

6. Write short notes on : 15

(*a*) Descriptive types of research

(*b*) Non-parametric test

(*c*) Primary data sources.

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

NEPSST—94—2025

FACULTY OF SCIENCE & TECHNOLOGY

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

APRIL/MAY, 2025

(NEP-2020)

ZOOLOGY

(SZOOCT-401)

(Invertebrates Structure & Function)

(Saturday, 19-4-2025) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—80

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

(*ii*) Out of remaining five questions (Q. Nos. **2** to **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*) Write a note on structure and function of Cilia.

(*b*) Describe the Gills in invertebrates.

(*c*) Describe primitive Nervous system in Coelentrata.

(*d*) Describe Nauplius Larva and its significance.

P.T.O.

2. (*a*) Describe the structure of flagella and flagellar locomotion in protozoa. 10

(*b*) Describe Hydrostatic movement in Coelenterata. 10

3. (*a*) Give an account of nutrition in Protozoa. 10

(*b*) Describe the structure and functions of tracheae and add a note on mechanism of tracheal respiration. 10

4. (*a*) Describe the structure and functions of Coelomoducts and nephridia as excretory organ and add a note on mechanism of excretion. 10

(*b*) Describe the advanced nervous system of Annelida with suitable examples. 10

5. (*a*) Describe the different larval forms in Trematodes. 10

(*b*) Describe the general characters of Hemichordata. Add a note on its economic importance. 10

6. Answer each of the following : 20

(*a*) Describe various types of coelom in invertebrates.

(*b*) Write a note on Respiratory pigment.

(*c*) Describe Advanced Nervous System in Arthropoda.

(*d*) Give an account of Bipinnaria Larva.

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

NEPSST—191—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP 2020 Pattern)

ZOOLOGY

Paper SZOOCT402

(Biosystematics, Taxonomy and Evolution)

(Tuesday, 22-4-2025) **Time : 10.00 a.m. to 1.00 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*) Give an account on cytotaxonomy.

(*b*) Give a biref account of taxonomic procedures.

(*c*) Give an account on economic importance of biodiversity.

(*d*) Explain the mutation theory of Hugo de Vries.

P.T.O.

2. (*a*) Give a brief account of the historical resume of systematics. 10

(*b*) Explain the importance and applications of Biosystematics in Biology. 10

3. (*a*) Describe the different kinds of taxonomic characters. 10

(*b*) Describe different types of taxonomic keys with their merits and demerits. 10

4. (*a*) Describe in detail salient features of International Code of Zoological Nomenclature. 10

(*b*) What is biodiversity ? Describe the methods of conservation of biodiversity. 10

5. (*a*) Explain the Darwin's theory of Natural Selection. 10

(*b*) Give a brief account of Molecular evolution. 10

6. Answer each of the following : 20

(*a*) Explain in brief the mechanism of speciation.

(*b*) Write a note on Taxonomic Paper.

(*c*) Describe distribution of biodiversity.

(*d*) Explain in brief Lamark's Theory of Evolution.

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

NEPSST—322—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP 2020 Pattern)

ZOOLOGY

Paper SZOOCT-403

(Economic Zoology and Animal Behavior)

(Thursday, 24-4-2025) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three 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 *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*) Give a brief note on *Entamoeba histolytica*.

(*b*) Write a note on Pearl producing molluscs.

(*c*) Give an account of learning animal behavior.

(*d*) Give a brief account of Parental care in Amphibians.

P.T.O.

2. (*a*) Give an account of the binomics, prevention and control of *Trypanosoma*. 10

(*b*) Describe the structure and life cycle of *Taenia solium*. 10

3. (*a*) Give an account on Apiculture with special reference to bee keeping and its economic importance. 10

(*b*) Give an account of management of fish farm. 10

4. (*a*) Describe different types of innate animal behaviour. 10

(*b*) Give an account of different types of Biological Drives. 10

5. (*a*) Describe in brief visual and chemical communication in animals. 10

(*b*) Describe Courtship and Mating behaviour in animals. 10

6. Answer each of the following : 20

(*a*) Give an account of mosquitoes as Vector of Human Diseases.

(*b*) Give a brief account of control measures of poultry diseases.

(*c*) Write a note on motivated behavior in animals.

(*d*) Explain in brief the optimal foraging theory.

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

NEPSST—496—2025

FACULTY OF SCIENCE & TECHNOLOGY

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

APRIL/MAY, 2025

ZOOLOGY

(Quantitative Biology and Bioinformatics)

(Saturday, 26-4-2025) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *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 diagram wherever necessary.

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

(*a*) Secondary data

(*b*) Bar graph

(*c*) Swissprot

(*d*) Software used in drug discovery.

P.T.O.

2. (*a*) Explain in detail classification and tabulation of data. 8

(*b*) Define Biostatistics. Discuss in detail application of Biostatistics. 7

3. (*a*) Discuss in detail data dispersion. 8

(*b*) Explain statistical data analysis method using PowerPoint. 7

4. (*a*) Explain in detail different protein databases. 8

(*b*) Explain role of Internet in Bioinformatics. 7

5. (*a*) Explain protein structure analysis, its scope and application. 8

(*b*) Explain drug discovery and role of protein structure data in drug discovery. 7

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

(*a*) Mean

(*b*) Use of excel

(*c*) NCBI

(*d*) General approach of drug discovery

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

NEPSST—497—2025

FACULTY OF SCIENCE & TECHNOLOGY

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

APRIL/MAY, 2025

(NEP 2020 Pattern)

ZOOLOGY

SZOOET-401

(Conservation Biology)

(Saturday, 26-4-2025) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *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 answers with suitable labelled diagrams, wherever necessary.

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

(*a*) Give an account of Western Ghats.

(*b*) Give an account of threats to biodiversity.

(*c*) Discuss in brief about causes of wildlife depletion.

(*d*) Give an account of diseases of wild animals.

P.T.O.

2. (*a*) Give an account of values of biodiversity. 8

(*b*) Give a comparative account of biodiversity at global level and national level. 7

3. (*a*) Give an account of technique used in Conservation of Biodiversity. 8

(*b*) What are endangered species ? Describe in detail endangered species of India. 7

4. (*a*) What is Wildlife conservation ? Discuss in detail different approaches for wildlife conservation. 8

(*b*) Discuss in detail economic and other benefits of wildlife. 7

5. (*a*) Describe in detail legislative measures for conservation of wildlife in India. 8

(*b*) Describe in detail present status of wildlife in India. 7

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

(*a*) Discuss in brief about Genetic diversity

(*b*) Discuss in brief about Exotic and invasive species

(*c*) Give an account of National Parks

(*d*) Give an account of Conservation tools.

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

NEPSST—47—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP-2020 Pattern)

ZOOLOGY

Paper SZOOCT-451

(Animal Ecology, Toxicology and Environmental Pollution)

(Thursday, 17-4-2025) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—80

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

(*ii*) Of the 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*) Explain in brief Liebig's Law of Minimum.

(*b*) Give a brief account of phosphorus cycle in an ecosystem.

(*c*) Write a note on control of air pollution.

(*d*) Give an account of pollution by solid waste.

P.T.O.

2. (*a*) What is Abiotic factor ? Discuss the role of water as an ecological factor. 10

(*b*) What is adaptation ? Describe in detail Volent and Desert adaptation of animals. 10

3. (*a*) What is Bio-geochemical cycle ? Describe water cycle in an ecosystem. 10

(*b*) Describe the important characteristics of population with suitable examples. 10

4. (*a*) Explain in detail toxic inorganic and organic compounds in an environment. 10

(*b*) Describe in brief the sources, effects and control of soil pollution. 10

5. (*a*) Give a brief account of various physical and chemical examinations of water. 10

(*b*) Describe in detail the sources, effects and control of noise pollution. 10

6. Answer each of the following : 20

(*a*) Write a note on Shelford's Law of Tolerance.

(*b*) Describe in brief Carbon cycle.

(*c*) Give a brief account of Global warming.

(*d*) Give an account of waste water treatment processes.

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

NEPSST—142—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP-2020 Pattern)

ZOOLOGY

Paper–SZOOC-1452 (T)

(Gamete Biology & Animal Development)

(Monday, 21-4-2025) **Time : 10.00 a.m. to 1.00 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 *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*) Describe in brief the process of oogenesis.

(*b*) Discuss in brief In Vitro Fertilization (IVF).

(*c*) Describe the process of cleavage in chick.

(*d*) Give a brief account on Amphibian metamorphosis.

P.T.O.

2. (*a*) Describe in detail the process of spermatogenesis. Add a note on factors controlling spermatogenesis. 10

(*b*) Describe the composition and functional roles of Semen. 10

3. (*a*) Describe in brief superovulation and embryo transfer technology. 10

(*b*) Give an account of the methods for Embryo sexing. 10

4. (*a*) Describe in detail the structure of hen's egg. 10

(*b*) Describe the foetal membranes in chick and explain their functions. 10

5. (*a*) Describe the process of metamorphosis in insects. 10

(*b*) What is regeneration ? Explain regeneration in invertebrates. 10

6. Answer each of the following : 20

(*a*) Explain in brief Semen deficiencies

(*b*) Give an account of Embryonic stem cells

(*c*) Describe the Blastula of chick

(*d*) Explain in brief process of regeneration in vertebrates.

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

NEPSST—240—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP-2020 Pattern)

ZOOLOGY

Paper–SZOOC-453(T)

(Biochemistry and Immunology)

(Wednesday, 23-4-2025) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—80

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

(*ii*) Out of remaining five 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 the properties of lipids.

(*b*) Explain in detail the process of Transamination.

(*c*) Describe the functions of Immunoglobulin.

(*d*) Write a note on functions of Cytokines.

P.T.O.

2. (*a*) Describe the classification, structure and properties of Carbohydrates. 10

(*b*) Describe the mechanism of Glycogenesis and Glycogenolysis. 10

3. (*a*) Give an account of oxidation of unsaturated fatty acids. 10

(*b*) Describe in detail various steps involved in Krebs-Henseleit Urea cycle. 10

4. (*a*) Describe in detail acquired immunity with suitable examples. 10

(*b*) Explain in detail antigen-antibody interaction and their applications. 10

5. (*a*) Describe in detail the alternative pathway of complement system. 10

(*b*) What is Hypersensitivity ? Describe various types of Hypersensitivity. 10

6. Answer each of the following : 20

(*a*) Give a brief note on HMP Shunt.

(*b*) Describe in detail the process of Deamination.

(*c*) Give an account of Hapten.

(*d*) Explain in brief Monoclonal Antibodies.

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

NEPSST—438—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP 2020 Pattern)

ZOOLOGY

SZOOET-451

(Pathobiology and Medical Zoology)

(Thursday, 25-4-2025) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—60

N.B. :— (*i*) Question Number **1** is compulsory.

(*ii*) Out of remaining *five* 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 of Tuberculosis.

(*b*) Give an account of *Trypanosoma gambiense*.

(*c*) Give an account of Vector control methods.

(*d*) Give an account of drug abuse.

P.T.O.

2. (*a*) Explain in detail haemophilia and add a note on symptoms and prevention. 8

(*b*) Give an account of Cancer. Add a note on its symptoms and treatment. 7

3. (*a*) Write a detailed account on life cycle, symptoms and control of *Plasmodium vivax*. 8

(*b*) Explain Life cycle, biology, symptoms and control of *Ascaris lumbricoides*. 7

4. (*a*) Explain in detail biology of mosquito. 8

(*b*) Describe in detail arthropods as vectors of human diseases. 7

5. (*a*) Give an account on Adolescence. 8

(*b*) Explain in detail types of aanemia and their associated changes in tissues. 7

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

(*a*) Give an account of Cholera.

(*b*) Give an account of Host parasite interaction.

(*c*) Describe vector borne transmission of pathogens.

(*d*) Give an account of Vaccines.

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

NEPSST—437—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP 2020 Pattern)

ZOOLOGY

SZOOE-1451

(Tools and Techniques for Biology)

(Friday, 25-4-2025) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *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*) Illustration your answers with suitable labelled diagrams, wherever necessary.

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

(*a*) Digital Balances

(*b*) pH Meter

(*c*) Section cutting

(*d*) Affinity chromatography.

P.T.O.

2. (*a*) Explain in detail working, maintenance and use of Water bath and Hot plate. 8

(*b*) Explain in detail operation, maintenance and care of Incubators and Ovens. 7

3. (*a*) Explain the principle, working mechanism and applications of Colorimeter. 8

(*b*) Explain the principle, working mechanism and applications of Ultracentrifuge. 7

4. (*a*) Explain the priniple, working and applications of Transmission electron microscope. 8

(*b*) Give an account of Staining techniques for different histochemical studies. 7

5. (*a*) Describe in detail Agarose Gel Electrophoresis. 8

(*b*) Explain in detail Density Gradient centrifugation. 7

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

(*a*) Handling and cleaning of Laboratory glassware

(*b*) Spectroflurometer

(*c*) Compound microscope

(*d*) Importance of separation techniques in biology.

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

NEPSST—22—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP-2020)

ZOOLOGY

Paper–SZOOCT-501

(Vertebrates : Structure and Functions)

(Wednesday, 16-4-2025) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—80

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 : 20

(*a*) Describe the structural peculiarities of Urochordata.

(*b*) Give an account on epidermal derivatives of Integuments.

P.T.O.

(*c*) Give a brief account of Hyostylic Jaw Suspension.

(*d*) Explain in brief Autonomic Nervous System.

2. (*a*) Give an account of general characters of Cephalochordata and discuss affinities of the group. 10

(*b*) Explain the various theories of origin of Vertebrates. 10

3. (*a*) Describe the evolution of heart in vertebrates. 10

(*b*) What is Blood ? Give an account of composition and functions of Mammalian Blood. 40

4. (*a*) Describe various types of respiratory organs in Vertebrates. 10

(*b*) Give a comparative account of fore limbs in different Vertebrates. 10

5. (*a*) Give an account of the evolution of Urinogenital System in Vertebrates. 10

(*b*) Describe the comparative account of brain of vertebrates. 10

6. Answer each of the following : 20

(*a*) Describe the salient features of class aves

(*b*) Describe in brief evolution of Aortic arches in Vertebrates

(*c*) Give a brief account of Pelvic girdle of mammal

(*d*) Describe in brief structure and function of Phonoreceptors in vertebrates

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

NEPSST—95—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP 2020 Pattern)

ZOOLOGY

Paper SOOCT-502

(Molecular Cell Biology)

(Saturday, 19-04-2025) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours *Maximum Marks*—80

Note :— (*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*) Active and passive transport

(*b*) DNA repair

(*c*) Extron

(*d*) Cyclic Adenosine Monophosphate.

P.T.O.

2. (*a*) Describe the Fluid Mosaic Model of cell membrane. 10

(*b*) Describe the structure and functions of nucleus. 10

3. (*a*) Describe the fine structure of Gene. 10

(*b*) Explain the role of attenuation and anti-termination in regulation of gene expression. 10

4. (*a*) Explain the mechanism of transcription in Prokaryotes. 10

(*b*) Describe the structure of *m*RNA in Eukaryotes. 10

5. (*a*) Give an account on signal transduction. 10

(*b*) Give a brief account on Apoptosis. 10

6. Answer each of the following : 20

(*a*) Myosin as microfilament

(*b*) DNA amplification

(*c*) Capping in RNA processing.

(*d*) Characteristics of cancer.

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

NEPSST—192—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP 2020 Pattern)

ZOOLOGY

Paper SOOCT503

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

(Tuesday, 22-4-2025) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *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 biref account of Parasitic Mites.

(*c*) Write a note on types of Parasites.

(*d*) Give an account of *Trichomonas vaginalis.*

P.T.O.

2. (*a*) What are the modes of transmission of Typhoid ? Describe the pathogenesis, prevention and control of Typhoid. 8

(*b*) Give an account of different types of Leprosy. Add a note on symptom and prevention of Leprosy. 7

3. (*a*) Describe the morphology, life cycle, diseases and control measures of Bed Bug (*Cimex lacturalis*). 8

(*b*) Give an account of mosquito borne diseases. Add a note on control of mosquitoes. 7

4. (*a*) Give an account of growth and methods of multiplication in protozoan parasites. 8

(*b*) Give an account of morphology, life cycle and pathogenicity of *Opalina spp.* 7

5. (*a*) Describe the morphology and life cycle *Toxoplasma* spp. Add a note on its pathogenicity. 8

(*b*) Describe the morphology, life cycle of *Leishmania donovanii.* Add a note on its pathogenicity. 7

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

(*a*) Write a note on antigen and antibody reactions.

(*b*) Write a note on parasitic mallophaga.

(*c*) Give a brief account of nutritionin in protozoa.

(*d*) Give an account of *Sarcocystis cruzi.*

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

NEPSST—323—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP 2020 Pattern)

ZOOLOGY

Paper SOOET-501

(Applied Parasitology–I-A) (Trematodes and Cestodes)

(Thursday, 24-4-2025) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three 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 answers with suitable labelled diagrams, wherever necessary.

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

(*a*) Describe the ultrastructure and functions of Tegument of Trematodes.

(*b*) Give a brief account of *Fasciolopsis buski*.

(*c*) Give an account of structural organization of Cestodarians.

(*d*) Give an account of *Diphyllobothrium latum*.

P.T.O.

2. (*a*) Give an account of general organization of Digenea. 8

(*b*) Give an account of general organization of Monogenea. 7

3. (*a*) Describe the morphology, life cycle and pathogenicity of *Schistosoma japonicum*. 8

(*b*) Describe the morphology, life cycle and pathogenicity of *Clonorchis sinensis*. 7

4. (*a*) Give the structural peculiarities and salient features of order Proteocephalidea with suitable examples. 8

(*b*) Give an account of modifications of Uterus in Cestodes. 7

5. (*a*) Describe the morphology, life cycle and pathogenicity of *Taenia saginata*. 8

(*b*) Describe the morphology, life cycle and pathogenicity of *Echinococcus granulosus*. 7

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

(*a*) Write a note on Egg Shell formation in Trematodes.

(*b*) Write a note on Innate immunity.

(*c*) Describe the salient features of order Hymenolepidea.

(*d*) Give an account of general organization in Acanthocephala.

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

NEPSST—324—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

ZOOLOGY

Paper SOOET-501(B)

(Fishery Science–1) (Fish Morphology, Anatomy and Physiology)

(Thursday, 24-4-2025) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three 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 answers with suitable labelled diagrams wherever necessary.

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

(*a*) Cycloid scales

(*b*) Accessory respiratory organs in fishes

(*c*) Causes of migration in fishes

(*d*) Functions of Thyroid gland in fishes.

P.T.O.

2. (*a*) Give an account of colouration in fishes. 8

(*b*) Write an account of alimentary canal in fishes. 7

3. (*a*) Give an account of lateral line canal system in fishes. 8

(*b*) Write an account on types and structure of gills. 7

4. (*a*) Give an account of parental care in fishes. 8

(*b*) What is migration ? Explain patterns of migration in fishes. 7

5. (*a*) Describe the structure and functions of Adrenal gland in fishes. 8

(*b*) Explain the structure and function of swim bladder in fishes. 7

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

(*a*) General characters of Elasmobranchii

(*b*) Gill arch

(*c*) Gonadosomatic Index (GSI)

(*d*) Functions of Pituitary Gland.

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

NEPSST—325—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

ZOOLOGY

SOOET-501

(Entomology–I-C) (Insect Taxonomy, Development and Ecology)

(Thursday, 24-4-2025) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three 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 answers with suitable labelled diagrams, wherever necessary.

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

(*a*) Molecular taxonomy

(*b*) Piercing and sucking mouth parts

(*c*) Digestion of keratine

(*d*) Effect of temperature on insects life.

P.T.O.

2. (*a*) Explain in detail diagnostic characters with suitable examples of order Lepidoptera. 8

(*b*) Explain in detail diagnostic characters with suitable example of order Thysanura. 7

3. (*a*) Explain in detail types of legs in Insects. 8

(*b*) Explain in detail structure of Abdomen in insects. Add a note on male genital organ of insects. 7

4. (*a*) Explain morphology and histology of alimentary canal of Insects. 8

(*b*) Explain male and female reproductive organs of Honey bees. 7

5. (*a*) Explain gall formation. Add a note on its structure. 8

(*b*) Explain Hormonal control of metamorphosis in Insects. 7

6. Attempt any *three* of the following : 15

(*a*) Dragon fly

(*b*) Wing coupling apparatus in insects

(*c*) Tracheoles

(*d*) Cleavage in insects.

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

NEPSST—326—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP-2020 Pattern)

ZOOLOGY

Paper SOOET-501(D)

[Animal Physiology—I]

(Thursday, 24-4-2025) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *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 any *three* of the following : 15

(*a*) Explain the glial cells.

(*b*) Write about SCUBA Diving.

(*c*) Describe Osmosis.

(*d*) Elaborate the enzyme inhibition.

P.T.O.

2. (*a*) Describe in detail physiology of homeostatic mechanism. 8

(*b*) Explain the ultrastructure of synapse and synaptic transmission. 7

3. (*a*) Give a detailed account on effects of high altitude on humans. 8

(*b*) Write about Respiratory and Endocrine response to exercise. 7

4. (*a*) Describe in detail origin, structure, organization and composition of Prokaryotic cells. 8

(*b*) Explain in detail Mineral Metabolism. 7

5. (*a*) Give a detailed account on oxidative phosphorylation. 8

(*b*) Explain in detail Michaelis-Menten equation. 7

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

(*a*) Explain in short Acetylcholinesterase.

(*b*) Give an account on Meditation.

(*c*) Describe Respiratory Quotient (R.Q.).

(*d*) Explain enzymes involved in Biological Oxidation.

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

NEPSST—43—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP 2020)

RESEARCH AND PUBLICATION ETHICS

NEPPE-1002

(Thursday, 17-4-2025) **Time : 2.00 p.m. to 4.00 p.m.**

Time—2 *Hours* *Maximum Marks*—40

N.B. *:—* (*i*) Question Number **1** is compulsory.

(*ii*) Solve any *three* questions of the remaining.

1. Write notes on : 5×2=10

(*a*) Nature of philosophy

(*b*) Research integrity

(*c*) Importance of publication ethics

(*d*) Characteristics to call a journal open

(*e*) *h*-index.

P.T.O.

2. (*a*) Define philosophy. Explain its branches. 5×2=10

(*b*) What do you mean by fabrication, falsification and plagiarism (FFP).

3. (*a*) Define publication ethics. Write the importance of publication ethics. 5×2=10

(*b*) Describe SHERPA/ROMEO online resource and list three variant of text.

4. (*a*) What is predatory journal ? List the common characteristics of it. 5×2=10

(*b*) What is impact factor ? How does it calculate ? Explain it with a suitable example.

5. (*a*) What is plagiarism ? Give their types. 2×5=10

(*b*) Describe in detail SNIP and SJR.

6. Write short notes on : 4×2.5=10

(*a*) Moral philosophy

(*b*) Duplicate publication

(*c*) Principle of transparency

(*d*) Turnitin.

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

NEPSST—143—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP-2020 Pattern)

ZOOLOGY

Paper SZOOCT-551

(Mammalian Endocrinology)

(Monday, 21-4-2025) **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 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 diagrams, wherever necessary.

1. Answer each of the following : 20

(*a*) Give an account of Hormones as a chemical messenger.

(*b*) Explain in brief disorders of Adrenal steroid hormones.

P.T.O.

(*c*) Describe the structure and histology of Parathyroid Gland.

(*d*) Describe the structure of placenta.

2. (*a*) Describe in detail the Hypothalmo-Hypophyseal Portal system and add a note on mechanism of hormonal action. 10

(*b*) Describe the histological structure of mammalian Pituitary Gland. Add a note on hormones secreted by Pituitary Gland. 10

3. (*a*) Describe the role of hormones secreted by Adrenal Gland. 10

(*b*) Describe the types of Diabetes and add a note on the role of insulin and glucagon in control of diabetes. 10

4. (*a*) Give an account of the endocrine role of Pineal Gland. 10

(*b*) Give an account of disorders of hormones of Thyroid. 10

5. (*a*) Explain in detail the hormones of Male reproductive Physiology. 10

(*b*) Explain male and female contraceptives and their mode of functioning. 10

6. Answer each of the following : 20

(*a*) Describe in brief Feedback mechanism of hormone.

(*b*) Describe in brief Renin-Angiotensin system.

(*c*) Give a brief account of Gastrointestinal Hormones.

(*d*) Give a brief account of parturition and lactation.

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

NEPSST—241—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP-2020 Pattern)

ZOOLOGY

Paper SZOOCT-552

(Genetics and Genetic Engineering)

(Wednesday, 23-4-2025) **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 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 diagrams, wherever necessary.

1. Answer each of the following : 20

(*a*) Describe Law of Dominance with suitable example.

(*b*) Describe duplication type of chromosomal mutation.

(*c*) Give an account on Klinefelter's syndrome.

(*d*) Give an account on Restriction Endonuclease enzymes.

P.T.O.

2. (*a*) Define interaction of genes. Explain supplementary and inhibitory factor with suitable example.

(*b*) What is sex linked inheritance ? Describe sex linked inheritance in man with suitable examples. 20

3. (*a*) What is Linkage ? Discuss kinds of linkages with suitable example.

(*b*) Define the concept of multiple alleles. Describe the inheritance of blood groups in man with suitable examples. 20

4. (*a*) Define structural chromosomal abnormality. Describe any *two* syndromes related to structural chromosomal abnormalities.

(*b*) What is polygenic inheritance ? Describe the concept of polygenic inheritance with suitable examples. 20

5. (*a*) Define cloning vectors. Describe in detail any *two* cloning vectors.

(*b*) Give an account on Electroporation and Microinjection techniques of gene transfer. 20

6. Answer each of the following : 20

(*a*) Describe sex determination in heterogametic males.

(*b*) Describe Aneuploidy in brief with suitable examples.

(*c*) Give an account of Alkaptonuria.

(*d*) Explain gel electrophoresis.

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

NEPSST—442—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP 2020 Pattern)

ZOOLOGY

SZOOET-551(D)

(Animal Physiology-II)

(Friday, 25-4-2025) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *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**.

(*iii*) *All* questions carry equal marks.

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

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

(*a*) Explain the Hepatitis.

(*b*) Write about Erythrocyte sedimentation rate

(*c*) Describe the structure of Midbrain

(*d*) Elaborate the types and characteristics of muscles.

P.T.O.

2. (*a*) Describe in detail histological structure and functions of pancreas and Gall bladder. 8

(*b*) Explain in detail mechanism of breathing. 7

3. (*a*) Give a detailed account of mechanism of Urine formation. 8

(*b*) Write about formation of blood cells. 7

4. (*a*) Describe in detailed Autonomic Nervous System (ANS). 8

(*b*) Explain the histology and development of mammary glands and add a note on physiology of breast cancer. 7

5. (*a*) Give a detail account on muscle metabolism. 8

(*b*) Explain in detail disorders of ear and eye. 7

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

(*a*) Explain in short Cystic fibrosis

(*b*) Give an account on acute and chronic renal failure.

(*c*) Write an account of Intra-uterine device

(*d*) Explain Otolithic organs.