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

NEPRT—36—2024

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2024

ZOOLOGY

Paper SZOOC-402

(Biosystematics, Taxonomy and Evolution)

(Monday, 22-04-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—80

Note :— (*i*) Question Number **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*) Explain in brief the mechanism of speciation.

(*b*) Describe different kinds of taxonomic characters.

(*c*) Explain autonym, homonym, tautonym with suitable examples.

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

P.T.O.

2. (*a*) What is biological classification ? Discuss the theories of biological classification. 10

(*b*) Explain the importance and applications of biosystematics in biology. 10

3. (*a*) Give a brief account of taxonomic procedures. 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*) Describe the methods of conservation of biodiversity. 10

5. (*a*) Explain Darwin's theory of natural selection. Add a note on Neo-Darwinism. 10

(*b*) Give a brief account on molecular evolution. 10

6. Answer each of the following : 20

(*a*) Give an account of Cytotaxonomy.

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

(*c*) Describe in brief the causes of loss of biodiversity.

(*d*) Explain in brief Hardy Weinberg principle.

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

NEPRT—92—2024

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2024

ZOOLOGY

(Conservation Biology)

(Tuesday, 30-04-2024) **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. 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 any *three* of the following : 15

   (*a*) Western Ghats

   (*b*) Endangered species.

   (*c*) National parks.

   (*d*) IUCN.

2. (*a*) Describe in detail Ecological and Genetic diversity. 8

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

3. (*a*) Discuss in detail Threats to biodiversity. 8

   (*b*) Explain in detail techniques used in Ex-situ conservation. 7

P.T.O.

4. (*a*) Give an account of different Sanctuaries in India. 8

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

5. (*a*) Describe in detail present status of wildlife in India. 8

(*b*) Describe in detail legislative measures for conservation of wildlife in India. 7

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

(*a*) Species richness indices.

(*b*) Representative wildlife species of India.

(*c*) Modes and methods of wildlife conservation.

(*d*) GIS and GPS.

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

NEPRT—54—2024

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2024

ZOOLOGY

Paper (NEPNY-54) (SZOOC-403)

(Economic Zoology and Animal Behaviour)

(Wednesday, 24-04-2024) **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. Nos. **2** to **6**) answer any **3** questions.

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

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

1. Answer each of the following : 20

   (*a*) Describe the role of mosquitoes in dengue infection.

   (*b*) Write a note on Nursery pond.

   (*c*) Give an account of motivated animal behaviour.

   (*d*) Describe mating behaviour in animals.

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

   (*b*) Describe the structure and life cycle of *Schistosoma haematobium*. 10

3. (*a*) Explain the social organization and life history of Honey bees. 10

   (*b*) Describe the life cycle of Silkworm. 10

P.T.O.

4. (*a*) Desribe Taxes and Reflexes in animals. 10

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

5. (*a*) Describe in detail the role of hormones in animals behavior. 10

(*b*) Describe in detail parental care in fishes. 10

6. Answer each of the following : 20

(*a*) Give an account of control measures of mosquitoes.

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

(*c*) Write a note on Learning Behavior pattern in animals.

(*d*) Explain the Anti-Predator Defense mechanisms.

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

NEPRT—18—2024

FACULTY OF SCIENCE & TECHNOLOGY

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

APRIL/MAY, 2024

(NEP-2020 Pattern)

ZOOLOGY

Paper-SZOOC401

(Invertebrates Structure and Function)

(Friday, 19-04-2024) **Time : 10.00 a.m. to 1.00 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 structure and functions of cilia in protozoa.

(*b*) Write an account on various organs of respiration in invertebrates.

(*c*) Describe the structure and functions of Coloemoducts and nephridia in invertebrates.

(*d*) Describe different larval forms in crustacea.

P.T.O.

2. (*a*) Describe structure and functions of flagella in Protozoa. 10

(*b*) Explain the Hydrostatic movement in Echinodermata. 10

3. (*a*) Describe the filter feeding in Polychaetes with suitable examples. 10

(*b*) Describe the various modes of Nutrition in Protozoa. 10

4. (*a*) Give an account of primitive nervous system in Coelenterata. 10

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

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

(*b*) Describe the organization and general characters of minor phyla. 10

6. Answer each of the following : 20

(*a*) Describe the different types of Coelom.

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

(*c*) Describe in brief osmoregulation in invertebrates.

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

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

NEPRT—91—2024

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2024

ZOOLOGY

(Quantitative Biology and Bioinformatics)

(Tuesday, 30-04-2024) **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 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 any *three* of the following : 15

   (*a*) Mean

   (*b*) Line graph

   (*c*) Swiss port

   (*d*) Biological search engine.

2. (*a*) Explain methods of data collection. 8

   (*b*) Explain classification and tabulation of data. 7

3. (*a*) Explain the method of calculation of standard deviation. 8

   (*b*) Explain methods of presentation of data by using excel. 7

P.T.O.

4. (*a*) Explain role of internet in Bioinformatics. 8

(*b*) Explain applications of Blast software. 7

5. (*a*) Explain protein structure analysis and its applications. 8

(*b*) Explain scope and application of Gene sequence search. 7

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

(*a*) Median

(*b*) Bar graph

(*c*) Protein analysis chimera

(*d*) Software used in drug discovery.

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

NEPRT—95—2024

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2024

ZOOLOGY

Paper SZOOC1451(T)

(Animal Ecology, Toxicology & Environmental Pollution)

(Thursday, 18-04-2024) **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*) Write a note on energy flow in an ecosystem.

(*b*) Describe in brief Water Cycle.

P.T.O.

(*c*) Give an account of Toxic inorganic and organic compounds.

(*d*) Write a note on sources of solid wastes.

2. (*a*) Define Ecosystem. Explain various biotic factors of an ecosystem. 10

(*b*) Describe in brief water as an ecological factor. 10

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

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

4. (*a*) Define pollution ? Give an account of monitoring and control of air pollution. 10

(*b*) Describe in brief toxic metal pollutants. Add a note on their sources and effects. 10

5. (*a*) Describe the various physical and chemical examinations of water. 10

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

6. Answer each of the following : 20

(*a*) Write a note on law of Limiting Factor.

(*b*) Describe in brief Nitrogen cycle.

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

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

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

NEPRT—137—2024

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2024

ZOOLOGY

Paper SZOOC453-(T)

(Biochemistry and Immunology)

(Tuesday, 23-04-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—80

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

(*ii*) Out of the 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 the following : 20

(*a*) Write a note on properties of proteins.

(*b*) Describe in brief the process of Ketosis.

(*c*) Describe the structure of antibody.

(*d*) Give a brief account on monoclonal antibodies.

P.T.O.

2. (*a*) Describe the different steps involved in the process of Glycolysis. 10

(*b*) Describe in detail the various steps in citric acid cycle. 10

3. (*a*) Explain in brief the phenomenon of β-oxidation pathway. 10

(*b*) Describe the Krebs-Henseleit urea cycle. 10

4. (*a*) What is immunity ? Explain in detail acquired immunity with suitable examples. 10

(*b*) Describe in detail innate immunity with suitable examples. 10

5. (*a*) Give a brief account on types of Hypersensitivity. 10

(*b*) Explain various immunodeficiency disorders with suitable examples. 10

6. Answer each of the following : 20

(*a*) Describe the properties of carbohydrates.

(*b*) Explain in brief the process of deamination.

(*c*) Describe the functions of immunoglobulin.

(*d*) Write a note on autoimmune diseases.

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

NEPRT—116—2024

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2024

ZOOLOGY

Paper SZOOC-452-(T)

(Gamete Biology and Animal Development)

(Saturday, 20-04-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—80

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

(*ii*) Out of the 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 composition of human semen.

(*b*) Write a note on Gamete Intrafallopian Transfer (GIFT).

P.T.O.

(*c*) Give a brief account on Foetal membranes in chick.

(*d*) Describe the regeneration in invertebrates.

2. (*a*) What is oogenesis ? Describe in brief the process of oogenesis. 10

(*b*) What is fertilization ? Describe the process of fertilization in animals. 10

3. (*a*) Explain the process of ovulation and ovum transport in mammals. 10

(*b*) Describe cloning of animals by nuclear transfer method. 10

4. (*a*) Describe in detail the structure of Hen's egg and explain the function of its various parts. 10

(*b*) Describe the process of Gastrulation in chick. 10

5. (*a*) Discuss the process of metamorphosis in insect and its hormonal control. 10

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

6. Answer each of the following : 20

(*a*) Explain the factors controlling spermatogenesis

(*b*) Write a note on embryo sexing.

(*c*) Describe in brief the process of Blastulation in chick

(*d*) Explain in brief the Amphibian metamorphosis.

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

NEPRT—159—2024

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2024

ZOOLOGY

Paper SZOOE451-(T)

(Pathobiology and Medical Zoology)

(Monday, 29-04-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—60

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

(*ii*) Of the 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*) Write a note on haemophilia.

(*b*) Give an account of *Taenia solium*.

(*c*) Write a note on vector control methods.

(*d*) Write a note on drugs abuse.

P.T.O.

2. (*a*) Explain in detail influenza 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*) Explain in detail biology, symptoms and control of *Entamoeba histolytica*. 8

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

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

(*b*) Describe in detail mode of transmission of pathogens by vectors. 7

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

(*b*) Explain in detail types of anaemia 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 *Schistosoma haematobium.*

(*c*) Give an account of *Musca domestica*

(*d*) Write a note on AIDS.

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

NEPRT—132—2024

FACULTY OF SCIENCE

M.Sc. (NEP) (Second Semester) EXAMINATION

APRIL/MAY, 2024

PHYSICS

Paper SPHYC-452

(Statistical Mechanics)

(Saturday, 20-04-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—80

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

(*ii*) Each question carries equal marks.

(*iii*) Figures to the right indicate full marks

(*iv*) Solve any *three* of the remaining five questions Q. No. **2** to Q. No. **6**.

1. Solve the following questions (each question **5** marks) : 20

(*i*) Calculate entropy of a perfect gas in microcanonical ensemble.

(*ii*) Photoelectric emission.

(*iii*) Phonon statistics

(*iv*) Virial equation of state.

P.T.O.

2. (*a*) Define ensemble and ensemble average. Distinguish between microcanonical, canonical and grand canonical ensembles. 10

(*b*) Derive an expression for M-B distribution law for velocity of particle. 10

3. (*a*) Derive F-D distribution law for the distribution of particle obeying F-D statistics. 10

(*b*) Obtain energy and pressure of a weakly degenerate Fermi gas. 10

4. (*a*) State and explain in detail about Landau's theory of liquid He. 10

(*b*) Explain the phenomenon of B-E condensation using B-E distribution law at $T < T_0$. 10

5. (*a*) Discuss Ising model in one and two dimensions. 10

(*b*) Derive the Fokker-Plank equation. 10

6. Write short notes on : 20

(*i*) Free electron model

(*ii*) λ-transition in liquid Helium

(*iii*) Brownian motion

(*iv*) Gibbs' Paradox.

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NEPRT-158-2024

FACULTY OF SCIENCE

M.Sc. ZOOLOGY (First Year) (Semester-II)

MARCH/APRIL, 2024

(NEP)

Course Code: SZOOE1451(T)

(Tools & Techniques for Biology (NEP))

(Monday, 29-04-2024) **Time: 10.00 a.m. to 01.00 p.m.**

Time - Three Hours **Maximum Marks-75**

Important Instructions:

v. Question Number 1 is compulsory.

vi. Out of remaining 5 Questions (Q. No. 2 to Q. No. 6) answer any 3 Questions.

vii. All Questions carry equal marks. viii. Illustrate your answers with suitable labeled diagrams, wherever necessary.

Q.1 Answer *Any Three* of the following: 15 Marks

a) Analytical balance

b) Hot plate

c) Compound microscope

d) Water bath

Q.2 a) Write note on working and principle of Incubators 08 Marks

b) Write note on working and principle heating mantle 07 Marks

Q2 a)) Write note on working and principle pH meter 08 Marks

b) Write note on working and principle colorimeter 07 Marks

Q.3 a) Discuss in detail Transmission Electron Microscopy 08 Marks

b) Discuss in detail staining technique for histochemical studies. 07 Marks

Q.4 a) Discuss working and principal of thin layer chromatography 08 Marks

b) Explain ultra centrifugation technique for separation of cell organelle 07 Marks

Q.5 Answer *Any Three* of the following: 15 Marks

a) Oven **b) Simple balance**

c) Dissecting microscope **d) Paper chromatography**

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

RT—265—2024

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2024

(New/CBCS Pattern)

ZOOLOGY

Paper-IV

(Conservation Biology)

(Wednesday, 24-04-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) Attempt *All* questions.

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

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

1. Explain in detail genetic and species diversity. 15

Or

Give a comparative account of biodiversity at global level and national level.

2. Discuss in detail major threats to biodiversity. 15

Or

What are threatened species ? Discuss in detail threatened species of India.

3. Explain in detail different approaches for wildlife conservation. 15

Or

Discuss in detail economic and other benefits of wildlife.

P.T.O.

4. Describe legislative measures for conservation of wildlife in India. 15

Or

Describe in detail diseases of wildlife animals and their management.

5. Write short notes on any *three* of the following : 15

(*a*) Western ghats

(*b*) Ex-situ conservation

(*c*) Sanctuaries.

(*d*) GIS and GPS.

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

RT—264—2024

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (First Semester) EXAMINATION

APRIL/MAY, 2024

(New/CBCS Pattern)

ZOOLOGY

Paper-IV

(Quantitative Biology and Bioinformatics)

(Wednesday, 24-04-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) Attempt *All* questions.

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

(*iii*) Illustrate your answer with suitable well labelled diagrams wherever necessary.

1. Describe in detail on measures of central tendancy and explain mean, median, mode. 15

Or

Explain in detail tabulation of data and its classification with suitable example.

2. Explain in detail graphic presentation of data with different types of graph. 15

Or

Explain in detail data presentation method using MS-PowerPoint program.

3. Discuss in detail metabolic databases. 15

Or

Discuss in detail protein database and its application.

P.T.O.

4. Describe in detail Drug discovery software used in drug discovery. 15

Or

Describe in detail gene sequence search analysis, it's scope and application.

5. Write short notes on any *three* of the following : 15

(*a*) Application of biostatics

(*b*) SPSS

(*c*) Swissport

(*d*) Biological search engine.

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

RT—215—2024

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2024

(New/CBCS Pattern)

ZOOLOGY

Paper VIII

(Biochemistry and Immunology)

(Tuesday, 23-04-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) Attempt *All* questions.

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

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

1. Describe the classification, structure and properties of lipids. 15

Or

Describe the different steps involved in the process of Glycolysis.

2. Give an account of oxidation of unsaturated Fatty Acids. 15

Or

Describe in detail various steps involved in Krebs-Henseleit Urea cycle.

3. Describe in detail Innate Immunity with suitable examples. 15

Or

Give an account of classification, structure and functions of Immunoglobulin.

P.T.O.

4. What is complement system ? Explain the classical pathway of complement system with its significance. 15

Or

Explain various autoimmune diseases with suitable examples.

5. Write short notes on any *three* of the following : 15

(*a*) Glycogenesis

(*b*) Transamination

(*c*) Structure of antibody

(*d*) Properties of cytokines.

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

RT—326—2024

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2024

(New/CBCS Pattern)

ZOOLOGY

Paper-IX

(Pathobiology and Medical Zoology)

(Monday, 29-04-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) Attempt *All* questions.

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

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

1. Explain any three types of Cancer. Add a note on its prevention and treatment. 15

Or

Explain in detail haemophilia and add a note on symptoms and prevention.

2. Explain in detail life cycle, biology, symptoms *Plasmodium vivax*. Add a note on its control measures. 15

Or

Explain in detail biology, symptoms and control of *Ascaris lumbricoides*.

3. Explain in detail biology of Anophiles. 15

Or

Explain in detail mode of transmission of pathogens by vectors.

P.T.O.

4. What are Drugs ? How do they causes addiction ? Discuss with suitable examples. 15

Or

Describe in detail changes in the blood during infection and diseases.

5. Write short notes on any *three* of the following : 15

(*a*) Cholera

(*b*) *Taenia solium*

(*c*) Vector control methods

(*d*) Types of anaemia.

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

RT—325—2024

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2024

(New/CBCS Pattern)

ZOOLOGY

Paper-IX

(Tools and Techniques for Biology)

(Monday, 29-04-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) Attempt *All* questions.

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

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

1. Explain the operation of Incubators and Ovens. What are they used for ? 15

Or

Describe the significance and care of heating mantles used in a laboratory.

2. Elaborate about the principles, working and uses of ultra-centrifuge. 15

Or

Give an account of importance of tools and techniques used in biology research.

3. Describe the principles and applications of phase contrast microscope. 15

Or

Explain in detail the different steps in microtomy of animal tissues.

P.T.O.

4. Discuss in detail affinity chromatography and its applications. 15

Or

Describe the principles and applications of gel electrophoresis.

5. Write short notes on any *three* : 15

(*a*) Fluorescence electron microscopy

(*b*) Spectrofluorometer

(*c*) Thin layer chromatography

(*d*) Gel electrophoresis.

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

RT—269—2024

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (Third Semester) EXAMINATION

APRIL/MAY, 2024

(New/CBCS Pattern)

ZOOLOGY

Paper-XIV-D

(Animal Physiology-II, General Physiology-II)

(Wednesday, 24-04-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) Attempt *All* questions.

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

(*iii*) Illustrate well labelled diagrams wherever necessary.

1. Describe in detail the origin, structure and composition of prokaryotic cell. 15

Or

Discuss in detail methods of studying permeability of cell membrane.

2. What is metabolism ? Explain in detail about energy metabolism. 15

Or

Explain in detail factors affecting Basal Metabolic Rate.

3. Discuss in detail Lineweaver-Burk equation in enzyme kinetics. 15

Or

Explain in detail enzymes in recombinant DNA technology.

P.T.O.

4. Discuss in detail Electron Transport Chain. 15

Or

Explain in detail various enzymes involved in biological oxidation.

5. Write short notes on any *three* : 15

(*a*) Osmotic pressure

(*b*) Calcium metabolism

(*c*) Enzyme isoforms

(*d*) Energetics of oxidative phosphorylation.

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

RT—266—2024

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2024

(New/CBCS Pattern)

ZOOLOGY

Paper-XIV

[Applied Parasitology-II (Protozoans of Medical Importance)]

(Wednesday, 24-04-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) Attempt *All* questions.

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

(*iii*) Illustrate your answers with well labelled diagrams wherever necessary.

1. Give an account of general organization of parasitic protozoa. 15

Or

Give a brief account of methods of feeding, digestion and nutritional requirements of parasitic protozoa.

2. Give a brief account of various modes of locomotion in Protozoa. 15

Or

Give a brief account of morphology, life cycle and pathogenicity of *Entamoeba histolytica*.

3. Give an account of mophology and life cycle of *Plasmodium vivax* and comment upon its pathogenicity. 15

Or

Describe the morphology, life cycle and pathogenicity of *Ichthyopthirius spp*.

P.T.O.

4. Describe the morphology, life cycle of *Leishmania donovanii*. Add a note on its pathogenicity. 15

Or

Give an account of morphology, life cycel and pathogenicity of *Giardia lamblia*.

5. Write short notes on any *three* of the following : 15

(*a*) Types of hosts

(*b*) Coccidiosis

(*c*) *Isospora* spp

(*d*) *Trichomonas foetus*.

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

RT—267—2024

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2024

(New/CBCS Pattern)

ZOOLOGY

Paper XIV

(Fishery Science-II : Fishery Morphology, Anatomy and Physiology-II)

(Wednesday, 24-04-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) Attempt *All* questions.

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

(*iii*) Illustrate your answers with well labelled diagrams wherever necessary.

1. Describe in detail structure of brain in cartilaginous fishes. Add a note on its functions. 15

Or

Write an account of organs of reproduction in fishes. Add a note on maturation and spawning in fishes.

2. Explain in detail patterns of migration and add a note on factors influencing migration in fishes. 15

Or

Give an account of methods for determination of age and growth in fishes.

P.T.O.

3. Describe in detail structure of electric organs in various fishes. 15

Or

Give an account on Bioluminescent organs in fishes.

4. Explain in detail structure and functions of thyroid gland in fishes. 15

Or

Give an account on dangerous fishes.

5. Write short notes on any *three* of the following : 15

(*a*) Parental care in *Arius*

(*b*) Advantages of migration in fishes

(*c*) Function of the swim bladder

(*d*) Neurohypophysis of Fish.

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

RT—268—2024

FACULTY OF SCIENCE

M.Sc. (Third Semester) EXAMINATION

APRIL/MAY, 2024

(New/CBCS Pattern)

ZOOLOGY

Paper-XIV-C (Entomology-II)

(Insect Taxonomy, Insect Development and Ecology)

(Wednesday, 24-04-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) Attempt *All* questions.

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

(*iii*) Illustrate your answer with well labelled diagrams wherever necessary.

1. Explain the general principles of insect taxonomy. Add a note on newer trends in insect taxonomy.

Or

Explain order Thysanura with suitable examples.

2. Explain order Diptera with suitable examples.

Or

Explain order coleoptera with suitable examples.

3. Describe the process of Oogenesis in insects.

Or

Describe various types of larvae and pupae in insects.

P.T.O.

4. Describe social life in insects with suitbale examples.

Or

Describe formation, structure and ecology of insect-galls.

5. Write short notes on any *three* of the following :

(*a*) Wings of Dragonfly

(*b*) Wings of moth and butterfly

(*c*) Corpora allata

(*d*) Effects of humidity on insect life.

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

RT—327—2024

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2024

(New/CBCS Pattern)

ZOOLOGY

Paper XIX-A

(Applied Parasitology-II)

(Animal Nematodes and Plant Nematodes)

(Monday, 29-04-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) Attempt *All* questions.

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

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

1. Give an account of the feeding and nutrition in Nematodes. 15

Or

Give an account of chemical composition and organizations of cuticle in Nematodes.

2. Describe the morphology, life cycle and pathogenicity of *Enterobius vermicularis*. 15

Or

Describe the morphology, life cycle and pathogenicity of *Wuchereria bancrofti*.

3. Give an account of above ground symptoms of nematode injuries to plant. 15

Or

Describe the procedure in soil fumigation for controlling plant parasitic Nematodes.

P.T.O.

4. Describe the structure, life cycle and control of *Anguina*. 15

Or

Describe the structure, life cycle and control of *Meloidogyne*.

5. Write short notes on any *three* of the following : 15

(*a*) Copulatory bursa in Nematodes

(*b*) Larval forms in Nematodes

(*c*) Below ground symptoms of nematodes injuries to plant

(*d*) *Pratylenchus*.

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

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FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2024

(New/CBCS Pattern)

ZOOLOGY

Paper-XVIII-D

(Animal Physiology-I, Mammalian Physiology-I)

(Tuesday, 23-04-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) Attempt *All* questions.

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

(*iii*) Illustrate your answer with well labelled diagrams wherever necessary.

1. Describe in detail histology of stomach and small intestine. 15

Or

Explain in detail physiology of digestion of protein and carbohydrates.

2. Describe in detail the mechanism of breathing in man. 15

Or

Explain in detail chemical and nervous control of respiration.

3. Describe in detail internal structure of mammalian heart. 15

Or

Explain in detail erythrocyte sedimentation rate (E.S.R).

P.T.O.

4. Explain in detail renal physiology of man. 15

Or

Discuss in detail about Dialysis therapy.

5. Write short notes on any *three* : 15

(*a*) Brush Border Enzymes

(*b*) Lung volume and lung capacities

(*c*) Structure of lymph node

(*d*) Urinary tract infection.

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

RT—330—2024

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2024

(New/CBCS Pattern)

ZOOLOGY

Paper-XIX-D

(Animal Physiology-II Mammalian Physiology-II)

(Monday, 29-04-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) Attempt *All* questions.

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

(*iii*) Illustrate your answers with well labelled diagrams wherever necessary.

1. Describe in detail structure and functions of forebrain. 15

Or

Explain in detail sleep and learning physiology.

2. Explain in detail female reproductive cycle and its hormonal control. 15

Or

Describe external morphology and histological structures of male reproductive system.

3. Explain in detail sliding filament mechanism of muscle contraction. 15

Or

Explain in detail various disorders of muscle.

P.T.O.

4. Discuss in detail the physiology of equilibrium. 15

Or

Explain in detail disorders of ear and eye.

5. Write short notes on (any *three*) : 15

(*a*) Electrocephalogram

(*b*) Intra Uterine Devices

(*c*) Twitch contraction

(*d*) Properties of sound.

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

RT—216—2024

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2024

(New/CBCS Pattern)

ZOOLOGY

Paper XVIII

(Applied Parasitology-I : Trematodes and Cestodes)

(Tuesday, 23-04-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) Attempt *All* questions.

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

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

1. Give an account of general organization of Digenea. 15

Or

Give an account of factors influencing Embryonation and hatching of eggs in Trematodes.

2. What is resistance ? Describe Innate resistance in Trematodes. 15

Or

Describe the morphology, life cycle and pathogenicity of *Paragonimus westermani*.

3. Give the structural peculiarities and salient features of order Proteocephalidea with suitable examples. 15

Or

Give an account of Hold Fast organs in Cestodes.

P.T.O.

4. Describe the morphology, life cycle and pathogenicity of *Taenia solium.* 15

Or

Describe the morphology, life cycle and pathogenicity of *Diphyllobothrium latum*.

5. Write short notes on any *three* of the following : 15

(*a*) Monogenea

(*b*) *Schistosoma mansoni*

(*c*) Modification of uterus in cestodes.

(*d*) Hydatid cyst.

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

RT—218—2024

FACULTY OF SCIENCE

M.Sc. (Fourth Semester) EXAMINATION

APRIL/MAY, 2024

(New/CBCS Pattern)

ZOOLOGY

Paper-XVIII-C

(Entomology-II)

(Economic Entomology)

(Tuesday, 23-04-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) Attempt *All* questions.

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

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

1. Explain in detail the procedure of Mulberry Sericulture. Add a note on Sericulture as cottage industry.

Or

Explain biology of Lac insect. Add a note on economic importance of Lac.

2. Explain in detail different types of honeybees. Add a note on economic importance of honey.

Or

Describe the role of insects as pollinators. Add a note on Butterfly farming.

3. Describe morphology, vectorship and pathogenicity of mosquitoes. Add a note on its control measure.

P.T.O.

Or

Describe morphology, vectorship and pathogenicity of pests of cattles. Add a note on its control measure.

4. Describe morphology and damage caused by carpet beetles. Add a note on its control measure.

Or

Describe morphology and damage caused by Bed bug. Add a note on its control measure.

5. Write short notes on any *three* of the following :

(*a*) Non-mulberry sericulture

(*b*) Forensic Entomology

(*c*) Morphology of head louse.

(*d*) Lepisma.

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

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FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2024

(CBCS/New Pattern)

ZOOLOGY

Paper XVI

(Genetics and Genetic Engineering)

(Thursday, 18-04-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours *Maximum Marks*—75

Note :— (*i*) Attempt *all* questions.

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

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

1. Describe Mendel's laws of inheritance with suitable examples. 15

Or

Elaborate about types of sex chromosomes and sex chromatin.

P.T.O.

2. Explain in detail the different kinds of linkages and their significance. 15

Or

Describe the mechanism of crossing over and its significance.

3. Describe any *two* sex chromosomal disorders in man. 15

Or

What are metabolic disorders ? Discuss any *three* metabolic disorders in man.

4. What are cloning vectors ? Elaborate about any *two* cloning vectors. 15

Or

Discuss the techniques of isolation and purification of genomic DNA.

5. Write short notes on any *three* : 15

(*a*) Law of dominance

(*b*) Erythroblastosis foetalis

(*c*) Tay Sach's disease

(*d*) Mutagenic agents.

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

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FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2024

(New/CBCS Pattern)

ZOOLOGY

Paper–XVII

(Mammalian Endocrinology)

(Saturday, 20-04-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

N.B. :— (*i*) Attempt *all* questions.

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

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

1. Describe in detail the Hypothalmo-Hypophyseal Portal System and add a note on mechanism of hormonal action. 15

Or

Describe the histological structure of mammalian Pituitary Gland. Add a note on hormones secreted by Adenohypophysis.

2. Describe the role of hormones secreted by Adrenal Gland. 15

P.T.O.

Or

Give an account of endocrine role of pancreatic hormones.

3. Give an account of disorders of Thyroid Hormones. 15

Or

Describe the histological structure of Parathyroid Gland. Add a note on role of parathyroid hormones.

4. Explain in detail the hormones of male reproductive physiology. 15

Or

Explain in detail the endocrine functions of placenta.

5. Write short notes on any *three* of the following : 15

(*a*) Feedback control of hormone action

(*b*) Disorders of adrenal steroids hormones

(*c*) Local hormones

(*d*) Progesterone.