

**M.Sc. (Semester II)**

**S.S. Jain Subodh P.G. College, Jaipur**

**M.Sc. Zoology**

**Semester II**

**First Paper**

**General Physiology**

**Assignment, March 2025**

**Attempt any four questions. One question from each unit**

**Unit I**

Q1. Define absorption? How the end product of carbohydrate and protein digestion is absorbed?

Q.2 Write short notes on

- a) Blood clotting
- b) Physiology of respiration

**Unit II**

Q3. Describe the structure of kidney and explain the detailed mechanism of urine formation.

Q.4 What is nerve impulse? Describe action potential in detail.

**Unit III**

Q5.Explain the role of Meditation and yoga and their effectson health

Q.6 Write short notes on

- a) Counter-current heat exchanger
- b) Hibernation and Aestivation

**Unit IV**

Q.7Write an essay on hypothalamic regulation of pituitary gland.

Q.8 Write short notes on

- a) Implantation
- b) Parturition

**M.Sc. (Semester II)**

**M.Sc. Semester Second Zoology  
Assignment 2025  
Second Paper – Environmental Biology & Ethology**

**Attempt four questions. One question from each unit**

**Unit I**

Q1. Explain Carbon and Nitrogen cycles with the help of suitable diagrams.

OR

Explain energy flow in an ecosystem with diagram

**Unit II**

Q2. Give a detailed account on Environmental Impact assessment.

OR

Write short notes on

- a) World heritage sites
- b) Species diversity

**Unit III**

Q3. Discuss in detail Methods of studying brain and behaviour

OR

Give a detailed account on Concepts of Ethology with the help of Suitable examples.

**Unit IV**

Q4. Write properties and advantages of social grouping and discuss social group of monkeys.

OR

Write short notes on

- a) Darwinian fitness
- b) Altruism and reciprocal altruism

**S.S. Jain P.G. College, Jaipur**

M.Sc. Zoology II Semester

**MZO 203**

**Molecular Biology, Biotechnology & Bioinformatics**

**Assignment March 2025**

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**Instructions to students:** Assignment consists of 8 questions. Attempt 4 questions (1 from each unit)

**Unit I**

Q1. Explain prokaryotic and eukaryotic replication process in detail.

Q2. Discuss the various post transcriptional modifications in RNA.

**Unit II**

Q3. Explain mechanism of translation in eukaryotes with suitable diagrams.

Q4. Write short notes on: a) Regulation of Translation

b) FLP/ FRT and Cre/ Lox Recombination

**Unit III**

Q6. Explain different molecular markers used in genome analysis.

Q5. Write short notes on: a) Production of Transgenic animals

b) ICSI and GIFT

**Unit IV**

Q7. Define biological databases. Describe major nucleotide sequence databases.

Q8. Write short note on a) Applications of Multiple Sequence Alignment

b) Phylogenetic Analysis

**S.S. Jain Subodh P.G. College, Jaipur (Autonomous)**  
**Assignment-March 2025**  
**M.Sc. Zoology (SEM-II)**  
**Paper IV – Genetics and Molecular evolution**

**Attempt four questions. One question from each unit**

**Unit-1**

Q1. Explain conjugation and recombination in bacteria with diagram?

Q2. Write short notes

(1) Heterosis (2) Penetrance

**Unit-2**

Q3. What do you understand human genome project?

Q4. Write short notes

(1) Patau syndrome (2) Philadelphia syndrome

**Unit-3**

Q5. Explain in brief Hardy-Weinberg law of genetic equilibrium.

Q6. Write short notes

(1) heritability (2) Inbreeding depression

**Unit-4**

Q7. Explain micro and macro evolution?

Q8. Write short notes

(1) convergent evolution (2) molecular clock

**S.S. Jain Subodh P.G. College, Jaipur (Autonomous)**  
**Assignment-March 2025**  
**M.Sc. Zoology (SEM-IV)**  
**Paper I – Applied Zoology & Biostatistics**  
**(General Paper)**

**Attempt four questions. One question from each unit**

**Unit-1**

Q1. Explain economic importance of helminthes?

Q2. Q2. Write short notes on-

(a) Apiculture (b) Lac Culture

**Unit-2**

Q3. Explain economic importance of mollusca?

Q4. Write short notes

(1) Pearl culture (2) Prawn culture

**Unit-3**

Q5. What do you understand statistical symbols and their use?

Q6. Write short notes

(1) Representation of data (2) variance

**Unit-4**

Q7. Explain chi square test and applications of chi square test?

Q8. Write short notes

(1) ANNOVA 2) Yate,s correction

**S.S. Jain Subodh P.G. College, Jaipur (Autonomous)**  
**Assignment-March 2025**  
**M.Sc. Zoology (SEM-IV)**  
**MZO-402: Tools & Techniques in Biology**  
**(General Paper)**

**Attempt four questions. One question from each unit**

**UNIT I**

Q1. What is microscopy? Describe its principle. Describe the Phase contrast microscopy in detail.

Q2. What is the principle of Electron microscopy? Give the comparative account of TEM and SEM.

**UNIT II**

Q3. Write short notes on any two of the following:

- a. Lamberts – Beer's Law
- b. NMR
- c. Ion Exchange chromatography

Q4. Write short notes on any two of the following:

- a. Affinity Chromatography
- b. Ultracentrifugation
- c. FACS

**UNIT III**

Q5. What do you mean by radioisotopes? Describe tracer techniques in the biology

Q6. Write short note on any two of the following:

- a. Autoradiography
- b. GMC
- c. Principles and methods of radiation dosimetry

**UNIT IV**

Q7. Write notes on any two of the following:

- a. Sequencing of nucleic acids
- b. Polymerase chain reaction
- c. Screening of genomic DNA Library

Q8. Write notes on any two of the following:

- a. Hybridoma technology
- b. Embryo Sexing
- c. Nucleic acid hybridization
- d. Southern Blotting

**M.Sc. (Semester IV)**

**M.Sc. Semester Fourth Zoology  
Assignment 2025  
Elective– Environmental Toxicology  
Third Paper – Applied Aspects of Toxicology**

**Attempt four questions. One question from each unit**

**Unit I**

Q1. Write short notes on the following

- a) Food and colour additives
- b) Microbiologic Agents Substances produced by cooking

**OR**

Write a detailed account on food ingredients and contaminants

**Unit II**

Q2. Write an account on Analytical role in general toxicology

**OR**

Give a detailed account on Criminal poisoning of the living

**Unit III**

Q3. Give a detailed account on Silicosis, Asbestosis occupational diseases.

**OR**

Write short notes on the following

- a) Toxicological Evaluation of Occupational agents
- b) Determinants of dose occupational exposure limits

**Unit IV**

Q4. Give a detailed account on Hazard Identifications and risk assessment

**OR**

Write short notes on

- a. Food & Drug Administration
- b. Occupational Safety and Health Administrations

**M.Sc. (Semester IV)**

**S.S. Jain Subodh P.G. College, Jaipur**  
**M.Sc. Zoology**  
**Semester IV**  
**Paper Code:**  
**Elective Paper**  
**Second Paper – Biomonitoring & Bioremediation**  
**Assignment, March 2025**

**Attempt any four questions. One question from each unit.**

**Unit-I**

Q1. Write short notes

A. Bio fertilizers

B. Microbial and Antimicrobial pesticides

Q2. Give detail account on Vermi-composting and its application.

**Unit-II**

Q3. Give detail account on Role of micro organism in Bio degradation.

Q4 Write short notes (any two)-

A. Biomagnification

B. Bioaccumulation

**Unit III**

Q5. Write short notes on (any two)-

A. Biomonitoring

B. Bioindicators

Q6. Write a detail account on types and Biological Effects of radioactive Substances on animals.

**Unit-IV**

Q7. Write short notes on (any two)-

A. Bioremediation Technologies

B. Bioremediation of Marine Oil pollutants

Q.8 Give a detail account on Microorganisms in Bioremediation and their role in Bioremediation.



# **M Sc. Fourth Semester Assignment-2025**

**Subject-Zoology**

**Papercode-MZO403D**

**Elective Paper-Cell and molecular biology**

**Paper-III Cellular Mechanics**

## **UnitI**

**Q1.**What is the difference between apoptosis and necrosis? Describe the mechanism of apoptosis in detail.

**Q2.**Describe types of caspases in detail inintrinsic and extrinsic pathways.

## **UnitII**

**Q3.**Describe in detail about various stages of development of cancer

**Q4.**Write short notes on(anytwo)

1. Properties of cancer cell
2. Tumour suppressor cells
3. Oncogenes

## **UnitIII**

**Q5.**Explain role of telomerase in aging

**Q6.**Describe the biology of Ageing

## **UnitIV**

**Q7.**What are stem cells.Describe in detail applications of stem cells in medical science.

**Q8.**Write short notes (any two)

1. Embryonic stem cells
2. Somatic cell nuclear transfer

Proliferation of differentiated cells

**S.S. Jain P.G. College, Jaipur**

M.Sc. Zoology IV Semester  
**MZO 404D [Molecular Immunology]**  
**Assignment March 2025**

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**Instructions to students:** Assignment consists of 8 questions. Attempt 4 questions (1 from each unit)

**Unit I**

Q1. What is immunity? Describe various components of humoral and cell mediated immunity.

Q2. Write short notes on a) B- and T-lymphocytes

b) Secondary Lymphoid Organs

**Unit II**

Q3. Describe various immunoglobulin-mediated effector functions with suitable diagrams.

Q4. Write short notes on a) Epitopes and Haptens

b) Monoclonal antibodies and its applications

**Unit III**

Q5. What is major-histocompatibility complex? Discuss general organization and inheritance of MHC.

Q6. Describe various antigen-antibody reactions with suitable examples.

**Unit IV**

Q7. Give a detail account on structure, function and properties of cytokines.

Q8. Explain immune response to various infectious diseases.