**M.Sc.(Semester I)**

## M.Sc.FirstSemesterExamination (Faculty of Science)

## FirstPaper

## Principles of Biosystematics &Taxonomy

### Unit-I

Q1.DefineBiosystematics?DescribeitsscopeandApplication?

Q2.Write a short note of following:

(a) Chemotaxonomy
(b) MolecularTaxonomy

### Unit-II

Q3.DescribeSpeciation in detail.

Q4. Give a detail account on species concept.

### Unit-III

Q5.Explaintaxonomiccharactersindetail.

Q6.Explain Shannon Weiner index in detail.

### Unit-IV

Q7.Whatdoyou meanbySystematicsPublications?Describethedifferentkinds of publications?

Q8.ExplaininbriefInternationalcodeofZoologicalnomenclature(ICZN).

**M.Sc. (Semester I)**

**Assignment**
**M. Sc. Zoology Semester First**
**(Faculty of Science)**
**Zoology**
**Second Paper –Structure and Function of Invertebrates**

**(Attempt any four questions)**

## Unit I

**Q1.** Give a detailed account on Ciliary and Flagellar Movement in protozoa

**OR**

Write short notes on (any two)

a) Type of symmetry
b) Segmentation
c) Fate of Blastopore

## Unit II

**Q2** Explain in detail the Patterns of Feeding and digestion in lower metazoa,

OR

Write Short notes (Any two)

a) Organs of respiration – Gills in Palaemon
b) Mechanism of respiration by Trachea
c) Respiratory pigments

## Unit III

**Q3.** Write Short notes (Any two)

a) Excretion and osmoregulation

b) Mechanism of excretion by Nephridia

c) Malphigian tubules

**OR**

Describe in detail Advanced Nervous system of Crustacean and insecta with suitable diagram.

## Unit IV

Q4. Describe larval forms of free living invertebrates. Write the significance of larval stage.

OR

Define Minor phyla. Explain general character, affinities and significance affinities of Ctenophora, Rhyncocoela.

**M.Sc. (Semester I)**

M.Sc. Zoology – I Semester
Assignment October, 2025
(Faculty of Science)
Paper III- Biochemistry

**Attempt any two Questions.**

**Unit-I**

Q1. Describe different type of protein structure?

Q2. Discuss fate of carbon skeleton of amino acids (with suitable diagrams).

**Unit-II**

Q3. Describe glycolysis and TCA cycle and its regulation.

Q4.Write short notes on (any two):

(a) Glycoprotein (b) Storage Polysaccharides (c) Glycogenolysis

**Unit III**

Q5. Explain fatty acid oxidation and its energetics.

Q6. Write short notes on (any two):

(a) Lipoproteins

(b) Spingolipids and glycolipids

**Unit IV**

Q7.What are vitamins? Discuss classification and biological functions of Vitamins?

Q8. Write short notes on (any two):

Enzyme kinetics (b) Enzyme nomenclature (c) Allosteric regulation of enzymes

# S. S. Jain Subodh PG College, Jaipur (Autonomous)

## Assignment Oct 2025

## M.Sc. Sem I

## (Faculty of science)

## Zoology

## Paper IV: Essentials of Cytology

### Unit-I

Q1 What are the major structural and organizational differences between prokaryotic and eukaryotic cells?

Q2 Discuss the mechanisms and types of transport across the cell membrane with examples.

### Unit-II

Q3 Differentiate the structural and functional characteristics of microfilaments, intermediate filaments and microtubules.

Q4Explain in detail the process of intracellular transport and its significance in the cell.

### Unit-III

Q5 Give detailed account on signal transduction

Q6 Write note on Protein sorting

### Unit-IV

Q7 Explain the significance of the G1, S, G2 and M phases in the cell cycle. How does each phase contribute to cell division?

Q8 Explain the role of cyclins and cyclin-dependent kinases (CDKs).

# S. S. Jain Subodh PG College, Jaipur (Autonomous)

## Assignment Oct 2025

## M.Sc. Sem III

## (Faculty of science)

## Zoology

### Paper I: Biology of Chordates

### Unit I

Q1 Give a detailed account of the evolutionary time scale, including the eras, periods and significant evolutionary events.

Q2 Explain the origin and evolution of Agnatha along with their general morphological and physiological characteristics.

### Unit II

Q3 Write a detailed note on adaptive radiation in bony fishes and its evolutionary significance.

Q4 Write a comprehensive account of the skull of reptiles, including its types and important adaptations.

### Unit III

Q5 Write note on flight adaptations

Q6 Give detailed account on origin and evolution of birds

### Unit IV

Q7 Discuss the origin of mammals and the major evolutionary changes that led to their development.

Q8 Explain the concepts of exothermy and endothermy and their significance in animals.

**M. Sc. Zoology Semester Third , October 2025**

**Assignment**
**Zoology**
**Paper II [Genes & Differentiation]**
**(Attempt any one question from each unit)**

## Unit -I

Q1. Explain the concepts of commitment, specification, induction, and competence in developmental biology.

Q2. Short notes on the following:

a. Gastrulation in frog
b. Role of cell signaling in neurulation

## Unit II

Q3. Compare the mechanisms of body axis establishment in mammals and birds. How does this process differ from that in Drosophila?

Or

Q4. Describe the stages and molecular control of tetrapod limb development.

## Unit III

Q5. Explain the mechanisms of chromosomal sex determination in Drosophila and mammals. How do these mechanisms differ, and what are the key genes involved?

**Or**

Q6. Explain testis determination genes and their role in sex differentiation.

## UNIT IV

Q7. Write short notes on any two of the following:

**a.** Hematopoietic stem cell transplantation
**b.** Somatic gene therapy
**c.** Cytoplasmic determinants

Q 8. Describe the role of stem cells in the renewal of various tissues, including the epidermis, connective tissue, and skeletal muscle.

**M.Sc. (Semester III)**

**Assignment**
**M.Sc. Zoology**
**Semester Third Examination**
**(Faculty of Science)**
**Elective Paper – Basics of Toxicology**

**(Attempt any four questions)**

## Unit I

Q1. Give a detailed account on spectrum of undesired effects of chemicals.

OR

Explain in detail Dose Response & Dose Response curves

## Unit II

Q2. Write short notes on (Any Two)

1. Carcinogenesis
2. Mutagenesis
3. Teratogenesis

OR

Give a detailed account on Mechanism of Toxicology

## Unit III

Q3. Explain Phase I Enzyme Reaction in detail

OR

Explain Phase II Enzyme Reaction in detail

## Unit IV

Q4. Define Hepatotoxicity, Explain types of Liver injury with Example.

OR

Write a detailed account on Reproductive toxicity.

**M.Sc. (Semester III)**

**Assignment**
**M.Sc. Semester Third Examination**
**(Faculty of Science)**
**Zoology**
**Elective Paper**
**Second Paper – Environmental Pollution and Legal Frame Work**

**(Assignment)**

**Q1**. Give detail account on atmospheric composition and stratification

**Q.2**.Write short notes

A. Wind Rose

B.Effects of air pollution on plants

**Q3**. Give detail account on water pollution including water quality parameters.

**Q4**. Write short notes

A. Biomagnification

B. Bioindicators

**Q5**. Write effects of noise pollution on plants and human.

**Q6.**Write short notes on

A. Sources of noise pollution

B. Permissible Standards

**Q7**. Write a notes on Wildlife protection act 1974.

**Q8.**Write short notes on

A. Biomedical waste rules, 1998

**B.** Tran boundary movement rules, 2008

**C.**

# M.Sc.(SemesterIII)
# M.Sc.SemesterThirdExamination (Faculty of Science)
# Zoology
# Electivepaper: Molecular biology of gene

## Unit I

Q1.DescribeindetaildifferenttypesofDNA(A, BandZDNA)withhelpofdiagram?

Q2.Writeshortnotes(anytwo)

Equivalancerule

Nucleosome
Selonoid

## Unit II

Q3.DescribevariousstepsofDNAreplicationinProkaryoteswithhelpofdiagram? Q4. Write short notes (any two)
(A).DNAMethylation

NucleotideExcisionRepair

Recombinationalrepair

## UNIT-III

Q5. DescribetheroleofTopoisomeraseinDNAReplication. Q6. Write short notes (any two)
DNAbindingdomain

ZincfingerProtien

Wingedhelix Protien

## Unit IV

Q7.Describeindetailvariousstepsinregulationoftryptophanoperonwithhelpofdiagram? Q8. Write short notes (Any two)
OperonConcept
Inducer
Corepressor

## Assignment - M.Sc. (Semester III)

# M. Sc. Zoology –III Semester (Faculty of Science)

### Core Elective - Proteomics

### Unit -I

Q1. Discuss prokaryotic transcription with suitable diagrams.

Q2. Describe the structural features of mRNA, tRNA and rRNA.

### Unit -II

Q3. Give a detailed account of post –transcriptional modification of RNA.

Q4. Discuss nuclear export of mRNA and its significance.

### Unit -III

Q5. Describe in detail eukaryotic translation (with diagrams)

Q6. Discuss post translational modifications and its significance.

### Unit -IV

Q7. What is meant by protein targeting? What is the role of signal recognition particles (SRPs) in protein targeting?

Q8. What is bioinformatics? Discuss nucleotide and protein databases available for gene and protein identification.