

M.Sc. (Semester I)

**M.Sc. First Semester Examination
(Faculty of Science)
First Paper
Principles of Biosystematics & Taxonomy
Attempt any 2 question.
Part-I**

Q1. What do you mean by Biosystematics? Describe its scope and Application?

Q2. Describe the Five Kingdom classification and brief outline of kingdom

Animalia.

Part-II

Q3. Describe in brief Modern trends in taxonomy.

Q4. Write short notes on:

(a) Chemotaxonomy (b) Neo -Taxonomy (c) Molecular Taxonomy

Part-III

Q5. Explain in detail taxonomic Procedure.

Q6. Explain Interpretation and application of important rules and formation of scientific names of different taxa.

Part-IV

Q7. What do you mean by Systematics Publications? Describe the different kinds of publications?

Q8. Explain in brief International code of Zoological nomenclature (ICZN).

M.Sc. (Semester I)

Assignment October, 2024

**M. Sc. Zoology Semester First
(Faculty of Science)**

Zoology

Second Paper –Life and Diversity of Nonchordata -I

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) Organization of coelom
- c) Fate of Blastopore

Unit II

Q2 Explain in detail Filter feeding in Polychaeta.

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) Coelomoducts

OR

Describe in detail Advanced Nervous system of Annelids with suitable diagram.

Unit IV

Q4. Describe Larval forms of free living invertebrates write the significance of Larva.

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, 2024
(Faculty of Science)
Paper III- Biochemistry**

Attempt any two Questions.

Unit-I

Q1. What is protein sequencing? Discuss the various methods of protein sequencing?

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

Unit-II

Q3 .Describe citric acid 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):

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

M.Sc. (Semester I)

M.Sc. -Semester-I

Assignment Zoology, October, 2024

Paper-IV-Essentials of Cytology

Unit-I

Q1. Explain transportation across cell membrane and differentiate between diffusion and active transport?

Q2. Write short note on:

- A) Difference between antiporter and symporter
- B) Structure of prokaryotic cell

Unit II

Q3. Write short note on:

- A) microtubules structure
- B) kinenin and dynein

Q4. Discuss in detail of Cell-Cell junction: Tight junction, Gap Junction?

Unit III

Q5. Discuss Cell surface receptors and Second messenger system?

Q.6 Write short note on:

- A) Cell surface receptors
- B) polysomes

Unit IV

Q.7. Describe in detail about cell division and events in cell cycle?

Q.8. Write short note on

- A) Mitosis and Meosis
- B) Cell cycle check point

M.Sc. (Semester III)

**M.Sc. Semester Third Examination
Assignment Zoology, October, 2024
Paper I-Biology of Chordates**

Unit I

Q1. Discuss the outline classification of chordates?

Q2. Write short note on:

- i) Ostrachoderms
- ii) placoderm

Unit II

Q.3. Discuss the evolution and adaptive radiation of Amphibia

Q4. Write short note on:

- i) Adaptive radiation in bony fishes
- ii) Sense organs in reptiles

Unit III

Q.5. Explain the Origin and evolution of Birds?

Q.6. Write short note on:

- i) Flightless birds
- ii) Modifications of beak

Unit IV

Q.7. Give an account of distinguishing characters and outline classification of mammals.

Q.8. Write short note on:

- i) Adaptive radiations in Eutherian mammals
- ii) Origin of mammals

M.Sc. (Semester III)

M. Sc. Zoology Semester Third, October 2024 Assignment Zoology Paper II: Genes & Differentiation

(Attempt any two questions from any unit)

Unit -I

Q1. Discuss the origin and fate of neural crest cells. How do these cells contribute to vertebrate development?

Q2. Short notes on any two:

- a. Gastrulation in Chick
- b. Gastrulation in Drosophila
- c. The role of cell-to-cell interaction and signaling during early morphogenetic development, including gastrulation, neurulation, and the formation of primordial organs.

Unit II

Q3. Explain the genetic mechanisms that establish the body axes in Drosophila. What role do genes like bicoid and nanos play in this process?

Or

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

Q4. Explain the homeobox concept and its significance in the development of different phylogenetic groups. How do homeotic genes regulate body patterning?

Unit III

Q5. Explain the role of hormones as mediators of development. How do hormones regulate various stages of development, and what are some examples of hormonal control in different organisms?

Or

Discuss how environmental cues affect animal development. What are some examples of environmental factors that can lead to malformations or disruptions during development?

Q6. Explain the mechanisms of chromosomal sex determination in Drosophila and mammals. How do these mechanisms differ, and what are the key genes involved?

Or

Discuss the concept of environmental sex determination. How do environmental factors influence sex determination in various species?

UNIT IV

Q7. Explain the impact of genetic errors on human development. Provide examples of genetic disorders that result from such errors and their effects on development.

Or

Describe the concept of gene therapy and its application in treating genetic disorders. What are the potential benefits and challenges associated with gene therapy?

Q8. Explain the characteristics and functions of embryonic stem cells. What are stem cell niches, and how do they support stem cell maintenance and function?

Or

Describe the role of stem cells in the renewal of various tissues, including the epidermis, connective tissue, and skeletal muscle. How do hematopoietic stem cells contribute to blood cell formation?

M.Sc. (Semester III)

Assignment October, 2024
M.Sc. Semester Third Examination
(Faculty of Science)
Zoology
Elective Paper: Basics of Toxicology

Unit I

Q1. Give a detailed account on Classification of Toxic agents.

OR

Explain in detail Dose Response & Dose Response curves

Unit II

Q2. Write short notes on (Any Two)

- a) Acute Toxicity
- b) Subacute Toxicity
- c) Chronic Toxicity

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

Explain Neurotoxicants. Write an essay of Neurotoxicity.

M.Sc. (Semester III)

Assignment
M.Sc. Semester Third Examination
(Faculty of Science)
Zoology

Elective Paper: Environmental Pollution and Legal Frame Work

(Attempt any two questions)

Unit-I

Q1. Write short notes (any two)-

- A. Wind Rose
- B. Classification of pollutants
- C. Plume Behavior

Q2. Give detail account on atmospheric composition and stratification.

Unit-II

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

Q4. Write short notes (any two)-

- A. Biomagnification
- B. Bioindicators
- C. Bioaccumulation

Unit III

Q5. Write short notes on (any two)-

- A. Sources of noise pollution
- B. Permissible Standards
- C. Thermal Pollution

Q6. Give a detailed account on radioactive pollution.

Unit IV

Q7. Write short notes on (any two)-

- A. Wildlife protection act 1974
- B. Forest conservation act 1980
- C. Hazardous waste handling rule

Q8. Write short notes on (any two)-

- A. Biomedical waste rules, 1998
- B. Tran boundary movement rules, 2008
- C. Air act 1981

M.Sc. (Semester III)

**M.Sc. Semester Third Examination
(Faculty of Science)
Zoology
Elective paper: Molecular biology of gene**

Unit I

Q1. Describe in detail different types of DNA (A, B and Z DNA) with help of diagram?

Q2. Write short notes (any two)

- a. Equivalence rule
- b. Nucleosome
- c. Solenoid

Unit II

Q3. Describe various steps of DNA replication in Prokaryotes with help of diagram?

Q4. Write short notes (any two)

- (A). DNA Methylation
- (b) Nucleotide Excision Repair
- (c) Recombinational repair

UNIT-III

Q5. Describe the role of Topoisomerase in DNA Replication.

Q6. Write short notes (any two)

- a. DNA binding domain
- b. Zinc finger Protein
- c. Winged helix Protein

Unit IV

Q7. Describe in detail various steps in regulation of tryptophan operon with help of diagram?

Q8. Write short notes (Any two)

- a. Operon Concept
- b. Inducer
- c. repressor

Assignment - M.Sc. (Semester III)

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

Zoology

Elective - Proteomics

(Attempt any two questions)

Unit -I

Q1. Differentiate between prokaryotic and eukaryotic 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 prokaryotic translation (with diagrams)

Q6. Discuss various inhibitors of translation in prokaryotes & eukaryotes.

Unit -IV

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

Q8. Discuss the significance of protein sorting (with examples).