



TRIPURA UNIVERSITY

**(A Central University)
Suryamaninagar-799022**

**Syllabus
OF**

**Zoology
(General & Major)**

Semester – III

2014

Tripura University
Semester-III
ZOOLOGY (GENERAL)
Paper - 3A

Full Marks: 50
(40+10)

Unit - I

Taxonomy & Classification, Evolution & Adaptation

Period 20

1. Definition, Systematics, Taxonomy, Classification, Phenon. Taxon, Category, Binomial and Trnomial nomenclature
2. Taxonomy Hieracrhy
3. Biological species concept
4. General characteristics and classification
 - (i) Porifera, Cnideria & Annelida – up to subclass
 - (ii) Amphibia & Reptilia – up to order
5. Darwinism and post Darwinian synthetic theory of evolution
6. Selection: stabilizing, directional and disruptive selection with example: evolutionary significance of each kind of selection
7. Isolating mechanism and speciation (allopatric, sympatric and parapatric)
8. Morphological and physiological adaptation of – i. Camel, ii. Whale, and iii. Bat.
9. Animal colouration and mimicry

Unit - II

Ecology, Ethology, Zoogeography & Biodiversity

Period - 20

1. Ecosystem: Definition, components, energy flow, food chain, food web, ecological pyramids.
2. Population ecology: properties and growth form; population regulation
3. Community ecology: Species diversity, stratification of forest, trophic structures, habbit and niche concept
4. Community succession: characteristics, types and causes of ecological succession
5. Social insects (termites and honey bee) and their behavior
6. Types of animal distribution: cosmopolitan, discontinuous, endemism, bipolar
7. Barriers and their roles in animal distribution
8. Zoogeographical realms: geographical range, physical features, faunal characteristics
9. Concept of biodiversity, causes of depletion of biodiversity: strategies of biodiversity conservation- *exsitu* and *insitu* methods.

Note: Internal assessment of 10 marks based on the above syllabus.

TRIPURA UNIVERSITY

SEMESTER – III

Zoology (Major)

Paper – 3A

Full Marks – 60

(48+12)

Periods - 24

Unit I: Genetics

- DNA as genetic material.
- Concept of Alleles and Multiple Alleles (ABO - Blood Group).
- Linkage -Types & Gene Mapping.
- Crossing over and Recombination – Molecular basis and Significance.
- Sex Determination in *Drosophila* (Gynandromorphism, Genic Balance Theory & Dosage Comensation).
- Sex Determination in Human (Role of Y-Chromosome or *Sry* gene, citing examples of Turner's & Klienfelter's Syndromes).
- Mode of Inheritance of Autosomal Chromosome (Albinism & Thalassaemia) and Sex-Linked Chromosome (Colour Blindness and Haemophilia).
- Mutation : Types, Agents, Induction and Detection of mutation (CIB Method).
- Method of detecting Biochemical Mutants; Metabolic Blockage of Arginine pathways in *Neurospora*.
- Human genetic disorders: a) Phenylalanine pathway (Alkaptonuria and Phenylketonuria), b) Tyrosine pathway (Albinism), c) Sickle Cell Anaemia.
- One Gene – One Polypeptide Hypothesis – present status.

Unit II: Ecology

Periods - 24

- **Basic concept:** a) Biotic and Abiotic Factors, b) Energy Flow in Ecosystems (Lindemann Model), implications of thermodynamic laws c) Interspecific Interactions in Ecosystem (Commensalism, Mutualism and Parasitism).
- **Population Ecology:** a) Attributes of natural Populations b) Population dynamics - Growth form and growth equations; c) Demography, life table types and survivorship curves
- **Community Ecology:** a) Species Diversity, Relative Abundance and Species Dominance, b) Stratification of Forest, c) Trophic Structure, d) Multidimensional Concept of Ecological Niche, e) Principles of Competitive Exclusion and species co-existence.
- **Community Succession:** Characteristics, Types and Causes of Ecological Succession a) Autogenic and Allogenic Succession, (b) Primary and Secondary Successions, d) Ecotone - features and formation, e) Edge Effect.
- **Behavioral Ecology:** Migration in birds
- **Environmental Pollution:** a) Air and Water (Sources and kinds), b) Acid rain, CFC and Ozone Depletion, c) Greenhouse effect and Global warming, d) Bio-magnification and Eutrophication – Causes and Significance with examples, e) Human Population Growth and its impact on environment;
- **Conservation of threatened wild life:** National and International Initiatives i) Indian Wildlife Protection Act 1972, ii) WWF, iii) IUCN, iv) Indian Biodiversity Act 2002.
- **Note:** Internal Assessment of 12 marks based on the above syllabus.

Tripura University
Semester-III
ZOOLOGY (GENERAL)
Paper – 3B
Practical

Full Marks 50
(40 +10)

Time : 4 hours

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|---|-------|
| 1. Study of biotic community (Soil & Water) and their significance (any two) | 3x2=6 |
| 2. Determination of Population Density by Quadrate method | 6 |
| 3. Estimation of Dissolved Oxygen in water and determination of pH | 6+2=8 |
| 4. Adaptive features of Physallia, Fasciola, Ascariis, Hirudinaria, Octopus, Exocoetus
Tree frog, Hemidactylus, Chiroptera. (any three) | 3x2=6 |
| 5. Field visit and submission of Field Note Book | 6 |
| 6. Practical Note Book | 4 |
| 7. Viva Voce | 4 |

Note: Internal assessment of 10 marks based on the above syllabus.

TRIPURA UNIVERSITY
SEMESTER – III
Zoology (Major)

Practical - Paper – 3B

Marks 40 (32 + 8)

TIME : 4 Hours

- 1) Preparation and identification of Polytene Chromosome of *Drosophila* Larvae. (5)
- 2) Pedigree analysis of common human traits (4)
- 3) Identification of meiotic cell division (any stage) (2)
- 4) Estimation of population by Capture – Recapture method by Hypothetical beads population. (5)
- 5) Estimation of Dissolved Oxygen (4)
- 6) Spot Identification and role of biotic community of soil and water :
(Any Two) a) Soil Mite b) Termite c) Collembola d) Ants
e) Earthworm f) Daphnia g) Cyclops (3+3=6)
- 7) Laboratory Note Book (3)
- 8) Viva voce (3)

NOTE : Internal Assessment of 8 Marks based on the above syllabus