



TRIPURA UNIVERSITY

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

Syllabus

OF

Zoology (General & Major)

Semester – V

2014

TRIPURA UNIVERSITY

Semester – V (Theory)

Zoology (Major)

Paper: 5A

Total Marks 100 (80+20)

Unit-I: Adaptation, Zoogeography & Ethology

(15 lectures)

1. Convergent and divergent adaptation and adaptive radiation in placental mammals with reference to teeth & limbs.
2. Morphological, anatomical and physiological adaptations in Pigeon, Camel and Whale.
3. Colouration - Cryptic & Warning.
4. Mimicry - Protective, Aggressive and Warning (Batesian and Mullerian).
5. Continental Drift theory and Discontinuous distribution of animals.
6. Zoogeographical realms (geographical composition, climate and faunal characteristics) - i) Ethiopian, ii) Oriental and iii) Australian.
7. Basics of animal behaviour; Innate and Learned behaviours (characteristics, differences, classification & examples).
8. Communication in animals with reference to pheromone and its role in territory marking, courtship and mating.

Unit-II: Animal Physiology

(15 lectures)

1. Physiology of digestion in mammals.
2. Transport of O₂ and CO₂ in the blood of mammals, Bohr Effect, Chloride Shift.
3. Respiration in i) Lata, ii) Shark, iii) Pigeon and iv) Human
4. Excretion: i) Nitrogen excretion in vertebrates (fish, bird, mammal), ii) Hypertonic urine formation in mammals.
5. Osmoregulation in fresh water fish and marine fish.
6. Generation of action potential and transmission of nerve impulse; mechanism of synaptic transmission.

Unit-III: Biodiversity and Conservation

(15 lectures)

1. Concept of Biodiversity; Types: Hierarchical levels (Genetic diversity, Species diversity), Community and Ecosystem diversity (alpha, beta and gamma diversity).
2. Biodiversity as a resource; changes/depletion of biodiversity and its causes.
3. Hot spots of biodiversity, Strategies for conservation of biodiversity (*ex-situ* and *in-situ* methods).
4. IUCN threatened categories: Endangered, Critically endangered, Vulnerable and Rare species.
5. Wild-life conservation with reference to Tiger and Rhino.
6. Protected area, Wildlife protection act, Biosphere reserves, National park and Sanctuaries; CITES.

Unit-IV: Biostatistics

(15 lectures)

1. Concept of mean, mode and median; their relationship.
2. Elementary concepts of probability and distribution
 - (a) Standard deviation (b) Standard error (c) Variance (d) t-test
 - (e) Simple-correlation coefficient, (f) Chi-square test.
3. Representation of statistical data:
 - a) Bar diagram
 - b) Histogram
 - c) Frequency Polygon
 - d) Line graph
 - e) Pie chart

Internal assessment of **20 marks** based on the above study material

TRIPURA UNIVERSITY

Semester – V (Practical)

Zoology (Major)

Paper: 5B

Practical paper

100 (80 + 20)

1. Morphological , behavioural and other adaptive features - *Anabas sp.*,
Exocoetus sp., *Amphipnous sp.* *Hyla sp* (Tree frog)., *Axolotl of Ambystoma*
sp., *Chamaeleo sp.*, *Gekko sp.*, *Naja sp.*, *Columba sp.*, *Psittacula sp.*
(Parrot), *Pteropus sp.*, *Bandicoota sp.*(any five). 4x5=20
2. Studies on Zoogeography: placement of 5 specific/ endemic/ characteristic
animals in their respective zoogeographical realm. 5+3= 8
3. Principle, procedure, display, drawing and labelling (any two of the
followings) 7x2=14
 - a) Studies on human blood group.
 - b) Studies on haemin crystals in human
 - c) Preparation of human blood film; identification of WBC.
4. Problems on Chi-square test and t-test: Principle, calculation, result and
inference (any one). 2+10+3=15
5. Observation on water/soil/terrestrial animal biodiversities (local fauna) and
submission of field study report.
10
6. Laboratory note book. 7
7. Viva. 6

Internal assessment of 20 marks based on the above study material

TRIPURA UNIVERSITY

B.Sc. Zoology (General)

Semester V

Paper: 5A

50

Unit-I: Parasitology and Medical Entomology

(15 lectures)

1. Life cycle, pathogenicity, clinical features and control measures of –
 - (a) *Plasmodium vivax*
 - (b) *Entamoeba histolytica*
 - (c) *Ascaris lumbricoides*
2. Parasitic adaptations in helminthes with reference to *Ascaris lumbricoides* and *Taenia solium*
3. Common insect vectors related to public health: their features and the disease (s) caused by these vectors -
 - a) Mosquitoes (*Anopheles, Culex, Aedes*)
 - b) House fly (*Musca sp.*)
 - c) Bed bug (*Cimex sp.*)
 - d) Head louse (*Pediculus sp.*)

Unit-II: Microbiology and Immunology

(15 lectures)

1. Types of Microbes and their important features.
2. Disease causing Microbes with reference to Cholera and Tuberculosis, mode of transmission.
3. Microbes in human gut and their beneficial role; concept of Probiotics.
4. Immune system – cells and organs of immune system, types of immune responses.
5. Antibodies types and its modal structure; antigen and antibody interaction.

Internal assessment of **10 marks** based on the above study material

TRIPURA UNIVERSITY

B.Sc. Zoology (General)

Practical paper

Paper: 5B

Practical paper

50 (40+10)

1. Identification with reasons: (any two) $5 \times 2 = 10$
 - a) *Entamoeba histolytica*
 - b) *Giardia intestinalis*
 - c) Plasmodium Sp.
 - d) *Ascaris lumbricoides*
 - e) *Culex sp.*
 - f) *Musca sp*
 - g) *Cimex sp.*
2. Adaptive features in *Fasciola sp.*, *Ascaris sp.*, *Taenia sp.* (any one). 5
3. Collection and preparation of gut fauna in cultivable fishes and fowl. $3+2+3 = 8$
4. Submission of life history stages of mosquito in glass bottle & also on drawing sheet. $4+3 = 7$
5. Lab Note Book. 5
6. Viva. 5

Internal assessment of 10 marks based on the above study material

TRIPURA UNIVERSITY
Semester – IV (Major / Practical)

Paper 4B Practical (based on theory paper) 40 (32 + 8)

- | | |
|---|-----------|
| 1) Spot identification of parasites: <i>Entamoeba sp</i> , <i>Ascaris sp</i> , <i>Ancylostoma sp</i> ,
<i>Taenia sp. (any one)</i> | 3 |
| 2) Adaptive features of: <i>Fasciola hepatica</i> , <i>Ascaris lumbricoides</i> , <i>Taenia</i>
<i>solium</i> , <i>Anchylostoma duodenale</i> , <i>Hirudinaria (any one)</i> | 4 |
| 3) Gram staining of bacteria | 4 |
| 4) Collection and preparation of gut parasites of cockroach and fowl | (2+3+2)7 |
| 5) Double staining method (H-E) of liver, kidney and testis tissue | (4+1+2) 7 |
| 6) Lab note book | 3 |
| 7) Viva voce | 4 |

Total = 32

N.B: Internal assessment of **8 marks** based upon above syllabus.

TRIPURA UNIVERSITY
Semester – IV (General/ Theory)

Paper 4A Theory

50 (40 + 10)

Unit I: Applied Zoology II

(15 lectures)

1. Sericulture: Species of silk worm, food plants and silk varieties in India, Life history and rearing method of *Bombyx mori*, its diseases and control measures.
2. Apiculture: species of honey bees in India; life history and rearing methods of *Apis indica*; bee products and their uses.
3. Vermiculture: Major vermicomposting species in India; Principle, method and importance of vermicomposting.
4. Prawn culture: Indian prawns of commercial value; Penaeid and non-penaeid group. Prawn culture and demerits in transportation of prawn seeds.

Unit II: Genetics and Molecular Biology

(15 lectures)

1. Mendelian principle of segregation and independent assortment.
2. Linkage, Recombination, Cytoplasmic inheritance.
3. Concepts of alleles and multiple alleles.
4. Sex determination in *Drosophila* and man; Sex chromatin or Barr body and its significance.
5. Congenital chromosomal abnormalities: Down, Turner and Klinefelter syndrome.
6. Mode of inheritance of autosomal and sex-linked genes with reference to albinism and color blindness.
7. DNA as a genetic material – experimental proof.
8. Replication, Transcription and Translation in prokaryotes.

N.B: Internal assessment of **10 marks** based upon above syllabus.

TRIPURA UNIVERSITY
Semester – IV (General / Practical)

50 (40 + 10)

Paper 4B (Practical based on theory paper)

A. Applied Zoology

1. Spotting and economic importance of the following specimens (Any three) 3x4=12

- a. *Tryporyza sp*
- b. *Sitophilus sp*
- c. *Bandicoota sp*
- d. *Bombyx sp*
- e. *Apis sp*
- f. *Perionyx sp*
- g. *Macrobrachium sp*

B. Genetics

- 2. Preparation and staining of cell division (onion root tip). (4+4) = 8
- 3. Identification of Meiotic division stages (any one) 4
- 4. Studies of Barr body in man (preparation and display) (4+2) = 6

C. Viva Voce

5

D. Lab Note Book

5

Total = 40

N.B: Internal assessment of 10 marks based upon above syllabus.