



TRIPURA UNIVERSITY

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

Syllabus

For

Semester – II

Zoology (Major & General)

Year 2014

Department of Zoology
Tripura University (A Central University)
B. Sc Zoology (Honours)
Proposed Syllabus (Under semester system) 2014

Year	Semester	Paper	Content	Marks
1 st Year	Semester I	Paper -1	U-I. Non Chordates I (Without Coelom) U-II. Non Chordates II (With Coelom) U-III. Chordates (Protochordates to mammals) U-IV. Taxonomy and Classification	100
		Paper-2A	U-I. Cell Biology, Histology and Developmental Biology U-II. Applied Zoology	60
	Semester II	Paper -2B	Practical based on theory of Paper II-A	40
Semester - III		Paper-3A	U-I. Genetics U-II. Ecology	60
	Semester-IV	Paper-3B	Practical based on theory of Paper -III-A	40
2 nd Year		Semester-IV	Paper -- 4A	U-I. Microbiology, Parasitology & Immunology U-II. Tools and Techniques in Biology
	Paper -- 4B		Practical Based on Theory of Paper -IV-A	40
3 rd Year	Semester- V	Paper-5A	U-I. Adaptation, Zoogeography and Ethology U-II. Comparative Animal Physiology U-III. Biodiversity and Conservation U-IV. Biostatistics	100
		Paper-5B	Practical Based on Theory of Paper-V-A	100
	Semester-VI	Paper -- 6A	U-I. Evolutionary Biology U-II. Biochemistry U-III. Endocrinology and Reproductive Biology U-IV. Molecular Biology and Genetic Engineering	100
		Paper -- 6B	Practical based on Theory of Paper VI-A	100

Semester – II

Paper 2A

Unit –I: Cell Biology, Histology and Developmental Biology

- Concept of Prokaryotic & Eukaryotic cells.
- Ultrastructure and functions of plasma membrane, mitochondria, Golgi complex, Endoplasmic Reticulum, ribosome, centrioles & lysosomes.
- **Chromatin:** Organization of euchromatin & heterochromatin; **Chromosome:** Morphology, primary & secondary constrictions, satellite bodies; classification on the basis of position of centromere, Polytene chromosome & Lampbrush chromosome.
- Nucleosome model of chromosome ultrastructure.
- **Cell cycle:** Phases & regulation, Mitosis, Meiosis, Synaptonemal complex.
- **Cancer:** Characteristics of cancer cells, classification according to tissue types; common carcinogens.
- Outline classification of animal tissue & their distribution, histology of skeletal muscle.
- Histology & functions of skin, liver, kidney & spleen in mammals.
- Gametogenesis, ultrastructure of sperm and ovum
- Physicochemical events in fertilization
- Eggs types, cleavage and fate maps
- Gastrulation in chick upto formation of three germinal layers
- Extraembryonic membrane in chick- formation and function
- Placenta : types, formation (rabbit) and function

Unit-II: Applied Zoology

- **Pisciculture:** Indian major carps, Exotic carps, composite fish culture- Principles & methods: Advantages & Disadvantages, Common fish diseases and their control.
- **Prawn culture:** Indian prawns of commercial value- Penaeid & Non-Penaeid group; Fresh & Brackish water Prawn culture.
- **Poultry:** Types of breeds, rearing and deep litter system- Advantages and disadvantages: Poultry Diseases & their control.
- **Apiculture:** Species of honey bee in India, social organization and life history of *Apis indica*, Modern methods of Apiculture, Bee products and their uses
- **Sericulture:** Species of Silkworm, Host plants and silk varieties in India, Life history and rearing of Mulberry silkworm, harvesting and processing of cocoon, reeling and extraction of silk; diseases of *Bombyx mori* and control measures
- **Vermiculture:** a) vermicomposting species [*Pertonyx excavatus* (Indian), *Eudrilus eugeniae* (South African), *Eisenia fetida* & *Eisenia andrei* (European)] and their selective features, b) Principle, methods and importance of vermicomposting
- **Pollinators and Pest:** a) Types of pollinators and pollination, importance of pollinators b) Definition of term pest, types of pest, importance of pest control, biological control of pest, pesticides and their hazards, integrated pest management, c) pest complexes of paddy, stored grains and brinjal; biology nature of damage and control of *Scirpophaga incertulus*, *Scitophilus oryzae* and *Leucinodes orbonalis*.

TRIPURA UNIVERSITY

SYLLABUS OF ZOOLOGY, 2014

2nd Semester

PAPER – II B

MAJOR

Total Marks = 50

1. Identification with reasons (Any 4)

4x4 =16

Group –A : Amoeba, Sycon, Obelia, Taenia, Ascaris, Leech, Perionyx excavatus (dung earthworm), Horse shoe crab, Macrobrachium rosenbergii, Pila, Starfish

Group – B : Branchiostoma, Ascidia, Petromyzon, Scoliodon, Sea Horse, Ichthyophis, Axolotl larva, Naja, Pigeon, Chiroptera.

2. A. Identification of Mammalian T.S. of : Skin, Spleen, small intestine, Liver, Pancreas, Kidney, Thyroid, Testes, Ovary (any one)

B. Chick Embryo : 24 hrs, 48 hrs, 72 hrs (any one)

C. Preparation and staining of skeletal muscle, Squamous epithelium & blood film (Human)

3+3+6 = 12

3. Preparation of onion root tips for chromosomal study, Preparation of buffer and determination of pH; Identification of Stages of Mitosis.

10

4. Submission of field report on the basis of Farm/field visit.

4

5. Submission of laboratory Note Book & Viva Voce

4+4=8

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B.Sc. Zoology (Elective)
Proposed Syllabus (Under Semester System)

Year	Semester	Paper	Content	Marks
1 st Year	Semester I	Paper -1	U-I. Non Chordates I (Without Coelom) U-II. Non Chordates II (With Coelom) U-III. Chordates I (Protochordates to fish) U-IV. Chordates II (Amphibia to mammals)	100
		Paper-2A	U-I. Cell Biology, Histology and Developmental Biology U-II. Biochemistry, Animal Physiology and Endocrinology	50
	Semester II	Paper - 2B	Practical based on theory of Paper II-A	50
Semester - III		Paper-3A	U-I. Taxonomy & Classification, Evolution & Adaptation U-II. Ecology, Ethology, Zoogeography and Biodiversity	50
	Paper-3B	Practical based on theory of Paper -III-A	50	
2 nd Year	Semester-IV	Paper - 4A	U-I. Applied Zoology U-II. Genetics and Molecular Biology	50
		Paper - 4B	Practical Based on Theory of Paper -IV-A	50
3 rd Year	Semester- V	Paper-5A	U-I. Parasitology and Medical Entomology U-II. Microbiology and immunology	50
		Paper-5B	Practical Based on Theory of Paper-V-A	50
	Semester-VI	Paper - 6	Project in Zoology i. Project Preparation (literature review, field work/lab work) - 50 ii. Presentation - 25 iii. Viva - 25	100

Semester – II

Paper – 2A

Unit –I: Cell Biology, Histology and Developmental Biology

- Ultra-structure and function of different cell organelles-Plasma membrane, Golgi complex, Mitochondria & Endoplasmic Reticulum.
- Ultra-structure of Chromosome with special reference to Nucleosome model.
- Cell cycle, Mitotic & Meiotic Cell Divisions.
- Outline classification, distribution and functions of Animal tissues.
- Histology and Functions of Skin, Liver, Pancreas, Thyroid, Testis and Ovary in mammals.
- Gametogenesis, Ultra structure of sperm and ovum in mammals.
- Physico-chemical events in fertilization. Egg Types, Cleavage and Blastulation in Amphibians. Role of Yolk in Cleavage.
- Fate Map and Gastrulation in frog
- Extra-embryonic Membrane: Formation and Function in Chick Embryo.
- Placenta : Types , Formation (Rabbit) and Function

Unit-II: Biochemistry, Animal Physiology and Endocrinology

- Classification, structure and function of carbohydrates
- Classification, structure and function of Protein
- Classification, structure and function of lipids
- Structure and function of Nucleic acid
- Concept of pH and buffer and their biological significance
- Enzymes – General properties, coenzymes, isoenzymes, allosteric enzymes, Mechanism of enzyme action, Factors affecting enzyme reaction
- Heterotrophic Nutrition ; Intracellular digestion in Protozoa, Extracellular digestion in general, Cellular digestion in Termite, Cattle and Horse
- Exchange of Gases: Respiratory pigments and their advantages, Oxygen and Carbon dioxide transport.
- Excretion and Osmo-regulation: Urine formation in mammals; Nitrogen excretion in Ammonotelic, Ureotelic and Uricotelic animals, Osmo-regulation in Fresh Water and Marine Vertebrates
- Physiology of Nerve Impulse conduction , Synaptic Transmission
- Brief outline of organization and functions of endocrine system in mammals with special reference to: Pituitary, Thyroid and Gonads.
- Reproductive Cycle (estrous cycle) and its hormonal control.

7/1

TRIPURA UNIVERSITY

SYLLABUS OF ZOOLOGY, 2014

2nd Semester

PAPER – II B

MINOR

Total Marks = 50

1. Identification with reasons (Any five) 4x5 = 20
 - a) Paramoecium, Sycon, Obelia, Fasciola, Ascaris, Earthworm, Cockroach, Pila, Starfish, Branchiostoma, Ascidia, Petromyzon, Scoliodon, Labeo, Toad, Snake (Naja), Pigeon, Rat, Chiroptera.
 - b) Identification of Cell division stages (Mitosis) with reasons. (Any one) 1x4=4
2.
 - a) Identification with characters of mammalian T.S. of Liver , Pancreas, Kidney, Thyroid, Testes, Ovary (any one)
 - b) Chick Emryo : 24 hrs, 48 hrs & 72 hrs (any one) 3+3 = 6
3. Biochemistry : Identification of Glucose, Starch & Protein.
Animal Physiology : Staining & Mounting of Human Squamous Epithelial tissue/Blood film .
Preparation of buffer, determination of pH. 5x2 = 10
4. Laboratory Note Book Submission & Viva Voce 5+5=10