

GUJARAT UNIVERSITY
EFFECTIVE FROM JUNE-2023
DISCIPLINE SPECIFIC COURSE (CORE) THEORY
B.Sc. SEMESTER – II ZOOLOGY
DSC-C-ZOO-121 T (4 CREDIT)

(IKS & ANIMAL DIVERSITY (NON-CHORDATES), ANIMAL PHYSIOLOGY, AND CYTOLOGY)

Course Outcomes:

- Students will develop understanding of fundamental body organizations, taxonomy and nomenclature of animals.
- Students will be able to visualize anatomical features of invertebrates by studying type animals.

Unit I: IKS & ANIMAL DIVERSITY (Non-chordates) – Systematics:

Role of Animals in Yoga

Animal keeping in Ancient India

General characters, Salient features and Classification of Invertebrates, starting from Kingdom up to Class, giving reasons & suitable examples (as per practical syllabus):

Porifera - General characters, Salient features and Classification

Coelenterata - General characters, Salient features and Classification

General characters, Salient features and Classification- Platyhelminthes and Aschelminthes

Unit II: ANIMAL DIVERSITY (Non-chordates): Type study

General topics -Polymorphism in Coelenterata (Hydrozoa and Scyphozoa)

Types of coral Reefs

Hydra (*Hydra vulgaris*):

Systemic position, Habits and habitat, External Morphology, Internal structure (Coelenteron, Body wall), Locomotion, Nutrition, Respiration, Excretion and Osmoregulation, Nervous system, Reproduction (Asexual & Sexual), Regeneration.

Unit III: Animal Physiology – Mammalian Urinary System

Anatomy and Histology of the Urinary system:

External and Internal Anatomy of the Kidneys, Blood Supply to Kidneys, Overview of kidney functions, The Nephron (Structure and Histology)

Renal Physiology:

Glomerular Filtrations, Tubular Reabsorption, Tubular Secretion

Counter current Mechanism, Micturition reflex

Hormonal Regulation in brief (Name of the Hormones and their function only)

Urinary diseases in brief: Renal stones, Renal failure, Urinary tract infection, Bladder infection

Unit IV: Cytology

Microscopy – Simple microscope, Compound Microscope

Difference between Chromatin, Chromosome, Chromatid

Classification of chromosomes:

Based on The location of their centromeres.

Based on their functions (i.e. somatic & sex chromosomes)

Ultrastructure & general functions of:

Metaphase Chromosome - (Centromere, Kinetochore, Telomere, Secondary constriction, Euchromatin, Heterochromatin)

Mitotic Cell cycle, Meiosis

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DISCIPLINE SPECIFIC COURSE (CORE) PRACTICAL
B.SC. SEMESTER – II ZOOLOGY
DSC-C-ZOO-122 P (4 CREDIT)
[PRACTICALS BASED ON THEORY PAPER: DSC-C-ZOO-121 T]

Unit I: IKS & ANIMAL DIVERSITY (Nonchordates) – Systematics:

(A) Identification & classification of invertebrates (Kingdom to Class):

Porifera : Leucosolenia, Euspongia, Hylonema

Coelenterata : Hydra, Physalia, Aurelia, Sea anemone, Coral.

Platyhelminthes : Planaria, Liverfluke, Tapeworm.

Nemathelminthes : Enterobius, Ascaris, Rhabditis

(B) Temporary mounting/slide of Spicules (Porifera)

(C) Role of Animals in Yoga poses

Unit II: ANIMAL DIVERSITY (Non-chordates):

Study of Hydra (*Hydra vulgaris*) - by Slides / Charts / Video / Photographs:

W.M Hydra, L.S. Hydra, T.S. Hydra,

Hydra with bud, Hydra with gonads

T.S. of Hydra passing through testis

T.S. of Hydra passing through ovary

Unit III: Animal Physiology - Urinary System

(A) Histology of urinary system: (Charts / Photographs)

Frontal Section of kidney

Renal corpuscle (Internal view)

Cortical and Juxtamedullary nephron

Blood supply to kidney

(B) Analysis of Normal and Abnormal constituents of urine:

Physical analysis: Colour, Odour, Specific gravity (Urinometer), pH

Chemical analysis: Sugar, Protein, Bile Salts, Ketones, Urea, Creatinine

Microscopies (Photographs): Blood corpuscles, Epithelial cells, phosphate crystals

Unit IV: Cytology

Mitosis – Onion root tip (Squash method)

Meiosis (through permanent slides)

Barr body