UNIVERSITY OF KOTA, KOTA SYLLABUS AND COURSE SCHEME ACADEMIC YEAR: 2022-23 BACHELOR OF SCIENCE- ZOOLOGY SEMESTER III



B. Sc. Semester III

- Z- 301. Paper I: Animal Diversity III (Protochordata to Agnatha)
- Z- 302. Paper II: Biochemistry and Immunology
- Z- 303. Practical: Exercise based on papers I and II.

Z- 301 Paper I Animal Diversity - III (Protochordata to Agnatha) UNIT-I

1. Chordata: Primary chordate characters

2. Protochordata (invertebrate chordates), concept of invertebrate and nonchordates.

3. Salient features and outline classification of Protochordata.

4. Affinities of Protochordata.

UNIT-II

1. Hemichordata: General characters and classification up to class level.

2. *Balanoglossus:* Habit, habitat, external features, coelom, body wall, digestive & skeletal systems.

3. *Balanoglossus*: Circulatory, respiratory, excretory, nervous and sense organs, reproductive system, Tornaria larva.

4. Affinities of Hemichordata.

Unit - III

1. Urochordata: General characters and classification up to class level.

2. *Herdmania:* Habit, habitat, external features, general anatomy, body wall, digestive & skeletal systems.

3. *Herdmania:* Circulatory, respiratory, excretory, nervous and sense organs, reproductive system, Ascidian larva and its metamorphosis.

4. Affinities of Urochordata.

UNIT-IV

1. Cephalochordata: General characters and classification up to class level.

2. *Branchiostoma* (Amphioxus): Habit, habitat, external features, general anatomy, body wall, digestive, skeletal systems.

3. *Branchiostoma* (Amphioxus): Circulatory, respiratory, excretory, nervous and sense organs, reproductive system, Larva.

4. Affinities of Cephalochordata.

UNIT- V

1. Agnatha: Salient features and examples. Origin, ancestry and diversity of vertebrates.

2. Living Agnatha - Cyclostomata: Classification up to class level and characters with

suitable examples

3. *Petromyzon*: General morphology and Ammocoete larva.

4. Affinities of Cyclostomata.

Z- 302 Paper II Biochemistry and Immunology

Unit –I

1. Biochemistry: - Definition. General biochemistry of cell–Ions, trace elements, micro and macro molecules.

2. Structure of Carbohydrates, Protein, Lipids and Nucleic Acids.

3. Cell metabolism: - Anabolic and catabolic process, metabolism of protein, carbohydrates and fats, ketone bodies.

Unit - II

1. Energy transfer, redox, cytochrome-system.

2. Enzyme: Nomenclature, classification, mechanism and specificity, enzyme activator, inhibitor, regulation and control of enzyme activity.

3. Basics of Immunity: Types of immunity: Active, passive, innate and acquired immunity,

Antigens and antibodies, types of antibodies and their structure. Interferons, cytokines (haptens).

Mechanism of reactions: Precipitation, agglutination, neutralisation, opsonisation.

Unit - III

1. Cells and Organs in Immunity: Humoral and cell- mediated immunity.

2. B and T cells. Lymphocytes: Helper, killer, memory and suppressor cells.

3. Complement system, secondary lymphoid organs; tonsils, adenoids, thymus, bone marrow, *bursa fabricus*, macrophages, Antigen - antibody reaction.

Unit-IV

1. Immune disorders and techniques: Basic idea of immune disorders.

2. Auto-immune diseases, AIDS, mechanism of HIV infection.

3. Monoclonal antibodies and their production, Applications of monoclonal antibodies; ELISA.

Unit – V

1. Vaccines and Transplants: Vaccination and immunization.

2. Vaccines; hepatitis vaccine, attenuation (oral polio vaccine), Antivenoms.

3. Organ transplants: Various types of transplant (allograft, xenograft, autograft), major histocompatibility complex.

Z- 303 Practical (Exercise based on papers I and II)

1. Study of animal diversity through museum specimens:

Balanoglossus, Herdmania, Doliolum, Salpa, Oikopleura, Amphioxus, Petromzon, Myxine, Bdellostoma, ammocoete larva.

2. Study of sections of organs and developmental stages:

Hemichordata - T.S. through proboscis, collar and trunk regions of *Balanoglossus*, tornaria larva.

Urochordata: Pharyngeal wall, spicules and tadpole larva of *Herdmania*. **Cephalochordata:** T.S. of Branchiostoma through oral hood, pharynx, gonads and caudal region.

3. Dissections: Through Chart / Model / Photograph / CD

3. a. Major –

Balanoglossus - Coelom, digestive and nervous system.

Herdmania - General anatomy, digestive and respiratory systems.

Branchiostoma - General anatomy, digestive, reproductive and nervous system.

3. b. Minor –

Spicules and pharyngeal wall of Herdmania, W. M. of Branchiostoma.

4. Biochemistry

Qualitative estimation of --

(1) Protein (2) Fat (3) Carbohydrate (4) Catalase enzyme in animal tissue.

5. Immunology

(a) ELISA test (b) Elementary knowledge about Immunological tests.

B.Sc. (Semester-III) - Zoology Practical Examination 2019 Distribution of Marks

Time – 4hrs	Max. Marks-50
1. Major Dissection - Through Chart / Model / Photograph / CD	05
2. Minor Dissection - Through Chart / Model / Photograph / CD	04
3. Slide Preparation	04
4. Biochemical exercise	04

	Total	50
10. Viva-voce		05
7. Record		05
6. Spots (10 X 2)		20
5. Immunological exercise		03