

UNIVERSITY OF KOTA, KOTA  
SYLLABUS AND COURSE SCHEME  
ACADEMIC YEAR: 2018-19  
**BACHELOR OF SCIENCE- ZOOLOGY III SEMESTER**  
**EXAMINATION- 2019**



**B. Sc. III Semester**

- 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 Agnathaa)**

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 tadpole 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, Petromyzon, 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* – Coelome, 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 2018**

### **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
5. Immunological exercise	03
6. Spots (10 X 2)	20
7. Record	05
10. Viva-voce	05
<b>Total</b>	<b>50</b>