

*Syllabus and Course Scheme*  
*Academic year 2019-20*



**Bachelor of Science- Zoology**  
**(Semester scheme)**

**UNIVERSITY OF KOTA**  
**MBS Marg, Swami Vivekanand Nagar,**  
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# University of Kota, Kota

*B.Sc. - Sem-I (Zoology) Exam.-December, 2020*

## **Paper I- Animal Diversity Part-I (Protozoa to Annelida)**

**Duration: 3 Hours**

**Max. Marks: 50**

### **Unit –I**

**Taxonomy:** - Definition and meaning of Taxonomy, Bases and importance of taxonomy. Outline classification of Invertebrates. Fundamentals of body organization emphasizing symmetry, metamerism, coelome and levels of structural organization. Classification of Protozoa, Porifera, Coelenterata, Platyhelminthes, Nematoda and Annelida (up to class with examples).

### **Unit –II**

**Protozoa:** - Study of structural organization and life history of *Trypanosoma* and *Paramecium*. Study of locomotion, osmoregulation, nutrition and reproduction in protozoa. Parasitism, pathogenicity and its control in protozoans with special reference to *Entamoeba*, *Leishmania* and *Trichomonas*.

### **Unit-III**

**Porifera:** - Habit, habitat, structure and physiology of *Scypha*. Types of canal system in the phylum Porifera.

**Coelenterata:** - Habit, habitat, structure, function and life history of *Aurelia*. Polymorphism in coelenterata, coral reef.

### **Unit IV**

**Platyhelminthes:** - Structure, physiology and life history of *Dugesia* and *Fasciola*. Parasitic adaptation in Helminthes.

**Nematyhelminthes:** - Study of structure and life history of *Dracunculus medinensis*. Nematode parasites and human diseases.

### **Unit-V**

**Annelida:-** Metamerism and coelom. General Characteristics of Annelida. Structure, physiology and life history of *Pheretima* and *Hirudinaria*. Salient features of *Neanthese* and heteroneries phase. Trochophore larva.

## **Paper-II- Genetics and Biotechnology**

### **Unit-I**

**Mendelian Genetics:** - Mendel's laws of inheritance. Monohybrid and dihybrid cross. Dominance. Incomplete dominance. Current status of Mendelism. Genetic variation: Variation in chromosome number (Euploidy and Aneuploidy).

### **Unit-II**

**Genetic disorders** in Human beings: (Down's, Turner's, Klinefelter's and Edward's syndrome) Types of chromosomal mutations. Molecular basis of gene mutation, mutagens, crossing over and linkage.

### **Unit- III**

**Sex-determination :** XX-XY, XO-XY and WZ mechanisms. Sex-linked inheritance (X-and Y-linked) Color blindness. Haemophilia. Gene interactions: supplementary, complementary,

epistasis and inhibitory. Multiple allele-ABO, Rh and MN blood groups and their inheritance, polymorphic genes.

#### **Unit-IV**

**Gene structure:** (Recon. Muton, cistron) and regulation of gene (lac operon: inducible and repressible system). Bacterial genetic transformation, Transduction and conjugation. Elementary idea about eugenics. Elementary idea about genetic engineering. Gene cloning and recombinant DNA technology. Restriction enzymes.

#### **Unit V**

**Biotechnology:** Introduction, historical prospective animal cell hybridoma, Monoclonal antibodies and their uses. Major areas and future prospects of biotechnology. Medicines and Biotechnology, Environmental Biotechnology, Biotechnology in pest control. Degradation of Xenophobic compounds including pesticides and surfactants. Food and beverages biotechnology, Fermented food: dairy products. Food preservation, microbial spoilage, alcoholic beverages, Vinegar.

#### **Zoology- Practical**

1. General survey of Invertebrate (Spots & Slides/pictures/models/ charts/electronic version)

**Protozoa:** - Entamoeba, Polystomella, Monocystis, Euglena, Noctiluca Leismania, Nyctotherus, Paramecium, Vorticella.

**Porifera-** Sycon, Hyalonema, Euplectella, Spongilla and Euspongia.

**Coelenterate-** Obelia colony (polyp & medusa) Physalia, Porpita, Aurelia, Rhizostom, Alcyonium, Corallium, Gorgonia, Pennatula, Madrepora.

**Platyhelminthes-:** Dugesia, Fasciola, Taenia, Schistosoma.

**Nematode-** Filaria, Dracunculus, Wuchereria, Enterobius

**Annelida:** - Neries (Heroneries with parapodia) Aphrodite, Arenicola, Pontobdella, Hirudinaria, Peripatus.

2. Study of permanent slides

**Porifera:** - T.S. of Sycon, L.S. of sycon.

**Coelenterata-** Planula larva of jelly fish.

**Platihelminthes-** T.S of Fasciola, scolex of Taenia, mature & gravid segment of Taenia, Hexacanth, bladderworm & cysticercus stage of Taenia, miracidium, sporocyst, redia, cercaria larva of Fasciola.

**Annelida-** T.S through different region of leach & Nereis. Parapodia of Nereis and Heteronereis, trochophore larva.

3. Dissection Through chart / model / Photograph / CD. – Hirudinaria – Morphology, general anatomy, digestion, nervous & excretory and reproductive system.

Earthworm – Anatomy, morphology, digestive and nervous system.

4. Mounting- (Permanent)

Protozoa – Euglena, Paramecium, Polystomela

Porifera- Spicules, fibres, gemmule

Coelenterata- Obelia medusa

Platyhelminthes – Taenia (proglotid)

Annelida – Nereis (parapodia)

5. **Genetics: Drosophila** – life cycle and its culture. Identification of male and female and wild and mutants (yellow, Ebony body; White-eye and vestigial wings).

Prepare slides of sex combs and salivary gland chromosomes of *Drosophila*. Barr body of human chromosomes.

Identification of blood group (ABO and Rh factors). Simple problems based on monohybrid / dihybrid cross.

**6. Biotechnology:** Demonstration of Bacteria by using Gram's stain.

(**Note-** Animals used in dissection are subject to the condition that these are not banned under the wild life protection act.)

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**PRACTICAL EXAMINATION**

**Distribution of marks**

Time 4 Hrs.

Max. Marks – 50

1.	Dissection - Through chart / model / Photograph / CD	06
2.	Slide preparation	05
3.	Biotechnology	04
4.	Genetics	05
5.	Spots (10)	20
6.	Record and field work	05
7.	Viva-voce	05
	<b>Total</b>	<b>50</b>