

# DIVERSITY AND DISTRIBUTION OF CHORDATA

## Paper 5

### THEORY

(48 Periods)

Outline classification of Chordates (2)

#### Unit 1: Protochordata (4)

General characters of Hemichordata, Urochordata and Cephalochordata and their larval forms.  
Retgressive metamorphosis in Urochordata.

#### Unit 2: Chordate Origin (2)

Dipleurula concept and the Echinoderm theory of origin of chordates.

#### Unit 3: Vertebrata (1)

Advanced features over Protochordata.

#### Unit 4: Agnatha (1)

General characters and classification of cyclostomes up to class

#### Unit 5: Pisces (6)

General characters of *Chondrichthyes* and *Osteichthyes* and classification up to order  
Migration in fishes, Osmoregulation, Parental care

#### Unit 6: Amphibia (6)

Origin of *Tetrapoda* (Evolution of terrestrial ectotherms)  
General characters and classification up to order  
Parental care in Amphibians

#### Unit 7: Reptilia (4)

General characters and classification up to order  
Affinities of *Sphenodon*  
Poison apparatus, Types of fangs, Biting mechanism in snakes

#### Unit 8: Aves (6)

General characters and classification up to order  
Principles and aerodynamics of flight, Flight adaptations  
*Archaeopteryx*-- a connecting link  
Migration in birds

**Unit 9: Mammals** (8)

General characters and classification up to order; Affinities of Prototheria  
Adaptive radiation with reference to locomotory appendages

**Unit 10: Zoogeography** (8)

Zoogeographical realms, Theories pertaining to distribution of animals, Plate tectonic and Continental drift theory, Distribution of vertebrates in different realms (Tabular form)

**DIVERSITY AND DISTRIBUTION  
OF CHORDATA  
Paper 5**

**PRACTICAL**

**1. Protochordata**

*Balanoglossus*, *Herdmania*, *Branchiostoma*, Colonial Urochordata  
Sections of *Balanoglossus* through proboscis and branchiogenital regions  
Sections of *Amphioxus* through pharyngeal, intestinal and caudal regions  
Permanent slide of *Herdmania* spicules

**2. Agnatha**

*Petromyzon*

**3. Fishes**

*Sphyrna*, *Pristis*, *Torpedo*, *Chimaera*, *Notopterus*, *Mystus*, *Heteropneustes*, *Labeo*, *Exocoetus*,  
*Echeneis*, *Anguilla*, *Tetrodon/ Diodon*, *Anabas*, Flat fish  
Dissection of Afferent branchial system of *Scoliodon*

**4. Amphibia**

*Ichthyophis/Ureotyphlus*, *Necturus*, *Bufo*, *Hyla*, *Alytes*, *Salamandra*

**5. Reptiles**

*Chelone*, *Trionyx*, *Hemidactylus*, *Varanus*, *Uromastix*, *Chamaeleon*, *Draco*, *Ophiosaurus*,  
*Bungarus*, *Vipera*, *Naja*, *Hydrophis*, *Zamenis*, *Crocodylus*  
Key for Identification of poisonous and non-poisonous snakes

**6. Aves**

Study of six common birds from different orders  
Types of beaks and claws  
Dissection of Brain of Pigeon/Fowl  
Temporary mount of pecten of Pigeon/Fowl

**7. Mammalia**

*Sorex*, Bat (Insectivorous and Frugivorous), *Funambulus*, *Loris*, *Herpestes*, *Hemiechenis*

### **ESSENTIAL READINGS**

- Young, J. Z. (2004). *The Life of Vertebrates*. III Edition. Oxford university press.
- Pough H. *Vertebrate life*, VIII Edition, Pearson International.
- Darlington P.J. *The Geographical Distribution of Animals*, R.E. Krieger Pub. Co.

### **SUGGESTED READING**

- Hall B.K. and Hallgrimsson B. (2008). *Strickberger's Evolution*. IV Edition. Jones and Bartlett Publishers Inc.