

**III SEMESTER B.Sc ZOOLOGY
PAPER - III: CHORDATA**

	52 hrs
UNIT: I	12 hrs
PROTOCHORDATA	7 hrs
1.1. Basic Chordate characters and outline classification upto classes.	1 hr
1.2. Urochordata: Herdmania – Morphology, tadpole of Herdmania and retrogressive metamorphosis.	4 hrs
1.3. Cephalochordata: Amphioxus – Morphology, feeding and circulatory system.	2 hrs
AGNATHA – THE JAWLESS VERTEBRATES	2 hrs
1.4. General characters of Agnatha	1 hr
1.5. Ammocoete larva and its significance.	1 hr
PISCES	3 hrs
1.6. General characters and classification upto subclasses - Chondrichthyes and Osteichthyes	1 hr
1.7. Dipnoi: Interesting features and their evolutionary significance.	1 hr
1.8. Migration in fishes: Catadromous and anadromus	1 hr
UNIT: II	19 hrs
AMPHIBIA	5 hrs
2.1. General characters and classification of living Amphibians upto orders, with suitable examples	2 hrs
2.2. Origin of Amphibia: Transition from water to land.	1 hr
2.3. Frog Osteology: Skull, lower Jaw, vertebral column, pectoral and pelvic girdles, limb bones(except bones of hand and foot)	2 hrs
REPTILIA	7 hrs
2.4. General characters and outline classification of modern reptiles with suitable examples	2 hrs
2.5. Adaptive radiation in extinct reptiles with suitable examples	2 hrs
2.6. Temporal fossae in reptiles	2 hrs
2.7. Interesting features of Sphenodon.	1 hr
AVES	7 hrs
2.7. General characters, differences between Ratitae and Carinatae.	2 hrs
2.8. Interesting features of Archaeopteryx.	1 hr
2.9. Flight adaptations in birds	2hrs
3.0. Migration in birds	2 hrs
UNIT: III	11 hrs
MAMMALIA	
3.1. General characters and classification upto subclasses (Prototheria, Metatheria and Eutheria) with suitable examples.	2 hrs
3.2. Type study: Rat- Morphology, digestive system, circulatory system (arterial and venous), brain and cranial nerves, urinogenital system (male and female).	9 hrs

UNIT: IV
ECONOMIC ZOOLOGY-III

10hrs

4.1. Pisciculture:

3 hrs

- a. Definition of Aquaculture and Pisciculture, inland and marine fisheries, inland Pisciculture - Procedure, composite fish forming and significance.
- b. Fish processing and preservation.

4.2. Poultry:

4 hrs

- a. Definition, Breeds of Fowls – indigenous and exotic breeds (birds of American class, birds of English class, and birds of Mediterranean class).
- b. Diseases of poultry birds: Ranikhet, Fowl Pox, Fowl Cholera and Fowl Typhoid.
- c. Poultry products and bi-products.

4.3. Dairy:

3 hrs

- a. Breeds of cattle: Indigenous and Exotic breeds
 - b. Improvements in cattle breeding – Artificial insemination, MOET.
 - c. Milk and its bi-products, Pasteurization and Gobar gas.
- (For all topics of Economic zoology, field visit is recommended)

REFERENCES:

1. Sedgwick Volumes(2010)
2. Parker and Haswel Vol. II(1995)
3. Kotpal Volume- Vertebrates(2016)
4. A manual of Zoology by Ekambarnath and Vishwanathan(1971)
5. Economic Zoology by Shukla and Upadayana(2016)
6. Economic Zoology by Reena and Mattur(2006)
7. Protochordata by Bhatia(1972)
8. Ascidiand by Kurian and Sebastian(1981)
9. Comparative Anatomy by Romer(1977)
10. Comparative Anatomy by Eten and Kent(1954)
11. Vertebrate by Young.(1962)

III SEMESTER B.Sc., ZOOLOGY PRACTICAL
CHORDATA: PAPER-III

15 Units

01. a. **Protochordata:** *Herdmania* and *Amphioxus*, T.S. of *Amphioxus* through pharynx and intestine.

01 Unit

- b. **Cyclostoma:** *Petromyzon*, *Ammocoete larva* and *Myxine*.

02. **Pisces:**

03 Units

- a. Cartilaginous Fishes: *Narcine*, *Trygon*, *Pristis*, *Myolobatis* (any two)

- b. Bony Fishes: *Hippocampus*, *Muraena*, *Ostracion*, *Tetradon*, *Pleuronectus*, *Diodon*, *Echeneis* and Angler fish (any three).

- c. Accessory respiratory organs: *Saccobranchus*, *Clarias* and *Anabas*
03. **Amphibia:** 03 Units
 a. *Bufo*, *Ambystoma*, *Axolotl* larva, *Necturus* and *Ichthyophis*.
 b. **Endoskeleton of Frog:** Skull, lower jaw, vertebrae, pectoral and pelvic girdles, limb bones (except bones of hand and foot).
04. **Reptilia:** *Turtle*, *Varanus*, Poisonous snakes – *Cobra*, *Krait*, *Russell's viper* and *Hydrophis*. 01 Unit
05. **Aves:** 02 Unit
 a. Endoskeleton – Heterocoelous Vertebra, Synsacrum, Sternum.
 b. Types of feathers.
06. **Mammalia:** *Mongoose*, *Squirrel*, *Pangolin*, *Hedge Hog*, and *Loris*. 01 Units
07. **Mounting:** Preparation of whole mount of fish scale/ coelenterate colony/ mouth parts of insects 02 Units
08. **Observation of systems in shark and rat** (Use of dissected animal/ photograph/ chart/model) 02 Units
 a. Shark: Afferent and Efferent branchial systems; Glossopharyngeal and Vagus nerves, and Brain.
 b. Rat: Urinogenital system of both male and female rat.

**SCHEME OF PRACTICAL EXAMINATION
 III SEMESTER B.Sc ZOOLOGY
 CHORDATA : PRACTICAL – III**

Duration: 3 hrs.

Max. Marks: 35

01	Systematics: Identify, classify and comment on the specimens A, B, C, D and E (E is from endoskeleton of frog/bird) with neat labelled diagram.	20 marks (5x4)
02	Whole mount: Prepare a whole mount of the given material.	05 marks
03	Observation of system/organ/chart/model: Identify and describe F with a neat labelled diagram.	05 marks
04	Class Records	05 marks
	Total	35 marks

