

**JYOTI NIVAS COLLEGE AUTONOMOUS
SYLLABUS FOR 2018 BATCH AND THEREAFTER**

Programme: B.Sc.

Semester: III

ZOOLOGY PAPER III

CHORDATA PART II (PISCES TO MAMMALIA)

Course Code: 18III ZO3

No. of Hours: 60

COURSE OBJECTIVES:

- To understand the basic structure and organization of chordates
- To know the taxonomic position of major classes of chordates and to appreciate their diversity and distribution
- To understand the process of Pisciculture, fish preservation and processing and poison extraction from snakes
- To understand the flight adaptations of birds and their classification and diversity
- To understand mammalian dentition and origin of tooth

LEARNING OUTCOMES:

- To Theoretical and practical skills on Pisciculture, aquarium management as entrepreneurial activities are acquired by the students
- Helped the students to understand the various biological structure and functions of a vertebrate body by learning the type study of Amphibia
- Students learned to appreciate taxonomy and diversity of the chordate animals
- Enabled the students in the Identification of poisonous and non-poisonous snakes of India and extraction of venom
- Understood the diversity in birds, flight adaptations in Aves and their nest architecture of different types of birds
- Learnt to appreciate dentition in mammals based on their diet

UNIT I: PISCES

08 HRS

1. General characters and out line classification up to orders

2 HRS

2. Dipnoi- Characteristic features

1 HR

3. Migration in fishes. Catadromous migration – Eel, Anadromous migration –

Salmon

2 HR

4. Fishery Biology:

- a) Types of fisheries- Marine and Inland fisheries (in brief) **1 HR**
- b) Economic importance of fishes **1 HR**
- c) Principles of fish processing & preservation **1 HR**

UNIT II: AMPHIBIA -I **06 HRS**

- 1. Origin of Amphibia **1 HR**
- 2. General characters and classification of living orders with suitable examples **1 HR**
- 3. Parental care in Pipa, Gastrothecus, Alytes and Ichthyophis **1 HRS**
- 4. Metamorphosis and Neuro-endocrine control of metamorphosis in Frog **2 HRS**
- 5. Neoteny versus Paedogenesis **1 HR**

UNIT III: AMPHIBIA -II **10 HRS**

Frog (Rana sp.) - A type study:

- i) Digestive system including buccal cavity **1 HR**
- ii) Circulatory system-
 - a) Structure of the heart **3 HRS**
 - b) Arterial system
 - c) Venous system
 - d) Double incomplete circulation

iii) Respiratory system:

Cutaneous respiration, Buccal respiration and Pulmonary respiration. **1 HR**

iv) Nervous system: **3 HRS**

- a) Central nervous system- structure of the brain and spinal cord.
- b) Peripheral nervous system- cranial and spinal nerves, their origin, distribution and function.
- c) Sympathetic nervous system

v) Urinogenital system - male and female **2 HRS**

UNIT IV: REPTILIA- I **07 HRS**

- 1. General characters and classification of living orders with suitable examples **2 HRS**
- 2. Terrestrial **1 HR**
- 3. Arcades and fossae in the skull **2 HRS**
- 4. Special characteristic features of Crocodile, Turtle and Sphenodon. **2 HRS**

UNIT V: REPTILIA –II **07 HRS**

- 1. Adaptive radiation (both extinct and extant) **2 HRS**

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| 2. General adaptations in snakes. | 1 HR |
| 3. a. Differences between poisonous and non poisonous snakes. | 1 HR |
| b. Brief account of Snakes of South India (Cobra, Krait, Sea snake, Viper, Python, Tree snake and Rat snake) | 1 HR |
| 4. Poison apparatus, venom composition and its effects, First aid for snakebite | 2 HR |

UNIT VI: AVES **09 HRS**

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| 1. General characters and classification up to subclasses. | 1 HRS |
| 2. Flight adaptations | 2 HRS |
| 3. Types of nests- Weaver birds, Horn bill, Tailor bird | 2 HRS |
| 4. Archaeopteryx – A connecting link between reptiles and birds | 1 HR |
| 5. Migration– | 3 HRS |
| a. Types and theories, routes and problems | |
| b. Ringing and radio-collaring techniques (mention the negative impacts of these techniques) | |
| c. Modern technique-remote sensing techniques | |

UNIT VII: MAMMALIA **13 HRS**

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| 1. General characters and classification up to orders with suitable examples | 2 HRS |
| 2. Special characteristics features - Prototheria, Metatheria and Eutheria. | 2 HRS |
| 3. Interesting features - Cetacea, Chiroptera, Proboscidea, Carnivora, Ungulata and Primates | 6 HRS |
| 4. Dentition in Mammals: | 3 HRS |
| a. Herbivorous forms: Rabbit and Horse | |
| b. Carnivorous forms: Dog and Cat | |
| c. Evolution of molar tooth. | |

Practical III
Chordata Part II

DURATION: 3 HRS/ UNIT

NO. OF UNITS: 15

CLASS PISCES

3 UNITS

1. Museum specimens - Narcine, Trygon, Ostracion, Muraena, Diodon, Hippocampus (male and female) and Echeneis
2. Accessory respiratory organs - Anabas, Clarias and Saccobranchus

CLASS AMPHIBIA

3 UNITS

1. Museum specimens - Bufo, Hyla, Ambystoma. Axolotl larva, Necturus and Lchthyophis
2. Skeleton of Frog:
 - a) Skull and vertebral column
 - b) Girdles- pectoral and pelvic,
 - c) limbs- forelimb and hind limb (Except bones of the hand and feet)

CLASS REPTILIA

2 UNITS

1. Museum specimens - Turtle, Chameleon, Draco, Varanus
2. Museum specimens –
 - a. Snakes of South India: Hydrophis, Dendrophis, Cobra, Krait and Viper
 - b. Poison apparatus

CLASS AVES

2 UNITS

1. Museum Specimens : Duck, Parakeet, Woodpecker & Kingfisher
2. a) Skeleton: Heterocoelous vertebra, synsacrum, sternum,
2. b) Girdles- pectoral and pelvic.

CLASS MAMMALIA

1 UNIT

1. Museum specimens - Mongoose, Bat, Squirrel, Rabbit, Hedgehog and Loris

STUDY OF DISSECTED SPECIMENS

2 UNITS

1. Shark- 9th and 10th cranial nerves and afferent
2. Frog – Arterial system
3. Rat - Urino-genital system of male and female

Practical tests/repetition

2 UNITS

Note: 13 Practical + 2 units for practical tests/repetition

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- 8.JORDAN E.L. AND P.S VERMA.1965. (Reprint 2001) CHORDATE ZOOLOGY, S. Chand &company, New Delhi
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