

**B.Sc. ZOOLOGY SYLLABUS UNDER CBCS**  
(With effect from 2016-2017)  
**III - SEMESTER**  
**DSC-1C (Theory)**  
**Animal Diversity- Vertebrates and Developmental Biology**

**Max. Marks: 80**

**UNIT – I**

- 1.1 Salient features of Urochordata; Retrogressive metamorphosis and its significance in Urochordata.
- 1.2 Salient features and affinities of Cephalochordata.
- 1.3 General characters of Cyclostomata; Comparison of the *Petromyzon* and *Myxine*.
- 1.4 General characters and classification of Chordata upto orders with examples.
- 1.5 General characters and Classification of Fishes up to order level with examples; *Scoliodon* – Respiratory, Circulatory and Nervous system; Types of Scales and types of Fins.

**UNIT – II**

- 2.1 Amphibia General characters and Classification up to orders with examples.
- 2.2 *Rana tigrina* - Respiratory, Circulatory and Nervous system; Parental care in amphibia, Neotony.
- 2.3 General characters and Classification of Reptilia up to orders with examples; *Calotes* – Respiratory system, Circulatory and Nervous system.
- 2.4 Temporal fosse in reptiles and its evolutionary importance.
- 2.5 Distinguished characters of Poisonous and Non-poisonous snakes; Rhynchocephalia.

**UNIT – III**

- 3.1 Aves General characters and Classification up to orders with examples.
- 3.2 *Columba livia* -Digestive system, Circulatory systems, Respiratory system and Nervous system.
- 3.3 Migration in Birds; Flight adaptation in Birds
- 3.4 Mammalia General characters and Classification up to orders with examples; Rabbit –Digestive, Respiratory, Circulatory and Nervous system.
- 3.5 Dentition in mammals; Aquatic adaptations in Mammals.

**UNIT – IV**

- 4.1 Gametogenesis (Spermatogenesis and Oogenesis); Fertilization.
- 4.2 Types of eggs; Types of cleavages.
- 4.3 Development of Frog up to formation of primary germ layers.
- 4.4 Formation of Foetal membrane in chick embryo and their functions.
- 4.5 Types and functions of Placenta in mammals; Regeneration in Turbellaria and Lizards.

**Suggested Readings:**

- 1. E.L.Jordan and P.S. Verma** '*Chordate Zoology*' -. S. Chand Publications.
- 2. Mohan P.Arora.** '*Chordata – I*, Himalaya Publishing House Pvt.Ltd.
- 3. Marshal, Parker and Haswell** '*Text book of Vertebrates*'. ELBS and McMillan, England.
- 4. Alfred Sherwood Romer.** Thomas S. Pearson '*The Vertebrate Body*, Sixth edition, CBS college Publishing, Saunders College Publishing
- 5. George C. Kent, Robert K. Carr.** *Comparative Anatomy of the Vertebrates*, 9th ed. McGraw Hill.
- 6. Kenneth Kardong** *Vertebrates: Comparative Anatomy, Function and Evolution*, 4th ed, 'McGraw Hill.
- 7. J.W. Young,** *The Life of Vertebrates*, 3rd ed, Oxford University press.
- 8. Harvey Pough F, Christine M. Janis, B. Heiser,** *Vertebrate Life*, Pearson, 6th ed, Pearson Education Inc.2002.

**ZOOLOGY PRACTICAL SYLLABUS**  
**III SEMESTER - ZOOLOGY**  
**Animal Diversity- Vertebrates and Developmental Biology**

**Max. Marks: 50**

**Study of museum slides / specimens / models (Classification of animals up to orders)**

1. **Protochordata:** *Amphioxus*, *Amphioxus* T.S. through pharynx
2. **Cyclostomata:** *Petromyzon*, *Myxine*, *Ammocoetus* larva
3. **Pisces:** *Sphyrna*, *Pristis*, *Torpedo*, *Channa*, *Pleuronectes*, *Hippocampus*, *Exocoetus*, *Echieneis*, *Labeo*, *Catla*, *Clarius*, *Auguilla*, *Protopterus*, Scales: Placoid, Cycloid, Ctenoid
4. **Amphibia:** *Ichthyophis*, *Amblystoma*, *Siren*, *Hyla*, *Rachophous*, *Bufo*, *Rana*, Axolotal larva
5. **Reptilia :** *Draco*, *Chamaeleon*, *Gecko*, *Uromastix*, *Vipera russeli*, *Naja*, *Bungarus*, *Enhydrina*, *Typhlops*, *Testudo*, *Trionyx*, *Crocodylus*, *Ptyas*.
6. **Aves:** *Archaeopteryx*, *Passer*, *Psittacula*, *Bubo*, *Alcedo*, *Columba*, *Corvus*, *Pavo*, Collection and study of different types of feathers: Quill, Contour, Filoplume, Down
7. **Mammalia:** *Ornithorhynchus*, *Tachyglossus*, *Pteropus*, *Funambulus*, *Manis*, *Loris*, Hedgehog;

**Histology:** T.S. of Liver, Pancreas, Kidney, Stomach, Intestine, Lungs Artery, Vein, Bone T.S., Spinal cord.

**Osteology :**

1. Rabbit – Axial skeleton system (bones of Skull and Vertebral Column)
2. Varanus, Pigeon and Rabbit – Appendicular skeleton system (bones of limbs and girdles)

**Dissections of *Labeo/Tilapia*:**

1. Digestive system.
2. Brain, Weberian ossicles
3. V, VII, IX, X cranial nerves

## **Embryology**

1. Study of T.S. of Testis and Ovary of a mammal
2. Study of different stages of cleavages (2, 4, 8, 16 cell stages); Morula, Blastula
3. Study of chick embryos of 18 hours, 24 hours, 33 hours and 48 hours of incubation

## **Laboratory Record work shall be submitted at the time of practical examination**

An “**Animal album**” containing photographs, cut outs, with appropriate write up about the above mentioned taxa. Different taxa/ topics may be given to different sets of students for this purpose.

## **Computer aided virtual dissections.**

## **Suggested manuals**

1. **S.S.Lal**, Practical Zoology – Vertebrata
2. **P.S.Verma**, A manual of Practical Zoology – Chordata
3. **Freeman & Bracegirdle**, An atlas of embryology