

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:** *Ornithorynchus*, *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