

SRI VENKATESWARA UNIVERSITY - TIRUPATI

B.S.c., (Honours) in **ZOOLOGY (MINOR)**

III SEMESTER

(W.E.F. Academic Year 2024-25)

COURSE5:ANIMALDIVERISTY-IIBIOLOGYOF CHORDATES

Theory

Credits:3

3hrs/week

LEARNINGOBJECTIVES

- To understand the animal kingdom.
- To understand the taxonomic position of Protochordata to Mammalia.
- To understand the general characteristics of animals belonging to Fishes and Reptilians.
- To understand the body organization of Chordata.
- To understand the taxonomic position of Protherian mammals.

LEARNING OUT COMES: By the completion of the course the graduate should be able to–

- Describe general taxonomic rules on animal classification of chordates
- Classify Protochordata to Mammalia with taxonomic keys
- Understand Mammals with specific structural adaptations
- Understand the significance of dentition and evolutionary significance
- Understand the origin and evolutionary relationship of different phyla from Protochordata to Mammalia.

SYLLABUS:

UNIT-I

- 1.1 General characters and classification of Chordata up to classes
- 1.2 Salient features of Cephalochordata, Salient features of Urochordata
- 1.3 Structure and life history of *Herdmania*, Retrogressive metamorphosis –Process and Significance
- 1.4 Cyclostomata, General characters, Comparison of Petromyzon and Myxine

Activity: Model preparation /Assignment /Students Seminar/Quiz/Project/Peer teaching/Report writing after watching any video on the above

Evaluation: Instructor supposed to prepare a detailed Rubrics for the evaluation of the above activity

UNIT-II

- 2.1 General characters of Fishes, Salient features Dipnoi
- 2.2 *Scoliodon*: External features, Digestive system, Respiratory system
- 2.3 *Scoliodon* Structure and function of Heart, Structure and functions of the Brain.
- 2.4 Migration in Fishes, Types of Scales

Activity: Model preparation /Assignment /Students Seminar/Quiz/Project/Peer teaching/Report writing after watching any video on the above

Evaluation: Instructor supposed to prepare a detailed Rubrics for the evaluation of the above activity

UNIT-III

- 3.1 General characters of Amphibia, General characters of Reptilia
- 3.2 *Rana hexadactyla*
a: External features, Respiratory system, Structure and function of Heart
- 3.3 *Rana hexadactyla* structure and functions of the Brain
- 3.4 *Calotes*: External features, Digestive system, structure and function of Brain
- 3.5 Identification of Poisonous snakes

Activity: Model preparation /Assignment /Students Seminar/Quiz/Project/Peer teaching/Report writing after watching any video on the above

Evaluation: Instructor supposed to prepare a detailed Rubrics for the evaluation of the above activity

UNIT-IV

- 4.1 General characters of Aves
- 4.2 *Columbalivia*: External features, Digestive system, Respiratory system
- 4.3 *Columbalivia*: Structure and function of Heart, structure and function of Brain
- 4.4 Migration in Birds, Flight adaptation in birds

Activity: Model preparation /Assignment /Students Seminar/Quiz/Project/Peer teaching/Report writing after watching any video on the above

Evaluation: Instructor supposed to prepare a detailed Rubrics for the evaluation of the above activity

UNIT-V

- 5.1 General characters of Mammalia
- 5.2 Classification of Mammalia up to sub -classes with examples
- 5.3 Comparison of Prototherians, Metatherians and Eutherians
- 5.4 Dentition in mammals, Aquatic mammals Adaptations

Activity: Model preparation/Assignment /Students Seminar/Quiz/Project/Peer teaching/Report writing after watching any video on the above

Evaluation: Instructor supposed to prepare a detailed Rubrics for the evaluation of the above activity

Co-curricular activities(suggested)

- Preparation of chart on Chordate classification (with representative animal photos) and retrogressive metamorphosis
- Clay models of Herdmania and Amphioxus
- Visit to local fish market and identification of local cartilaginous and bony fishes
- Maintaining of aquarium by students
- Model of fish heart and brain
- Preparation of slides of scales of fishes
- Visit to local/nearby river to identify migratory fishes and prepare study notes
- Preparation of Chart on above topics by students (Eg: comparative account of vertebrate heart/brain/lungs, identification of snakes etc.)
- Collecting and preparation of Museum specimens with dead frogs/snakes/lizard etc., and/or their skeletons
- Additional input on types of snake poisons and their antidotes (student activity).
- Collection of bird feathers and submission of report on Plumology
- Taxidermic preparation of dead birds for Zoology Museum
- Map pointing of prototherian and metatherian mammals
- Chart preparation for dentition in mammal

REFERENCE BOOKS

- J.Z.Young,2006.The life of vertebrates. (The Oxford University Press, New Delhi).646 pages. Reprinted
- Arumugam,N.Chordate Zoology,Vol.2. Saras Publication.278 pages.200 figs.
- A.J.Marshall,1995.Textbook of zoology,Vertebrates. (The McMillan Press Ltd.,UK).852 pages. (Revised edition of Parker & Haswell, 1961).
- M.Ekambaranatha Ayyar,1973.A manual of zoology.Part II. (S.Viswanathan Pvt.Ltd., Madras).
- P.S.Dhami&J.K.Dhami,1981.Chordate zoology. (R.Chand&Co.).550 pages.
- Gurdarshan Singh&H.Bhaskar,2002.Advanced Chordate Zoology. Campus Books,6 Vols., 1573 pp., tables, figs.
- A.K.Sinha,S.Adhikari&B.B.Ganguly,1978.Biology of animals.Vol. II.Chordates.(New Central Book Agency, Calcutta). 560 pages.
- R.L.Kotpal,2022.Modern textbook of zoology, Vertebrates. (Rastogi Publ.,Meerut).632 pages.

- E.L.Jordan&P.S.Verma,1998.Chordatezoology.
(S.Chand&Co.).1092pages.
 - G.S.Sandhu,2005.ObjectiveChordate Zoology. Campus Books,vii,169pp.
 - Sandhu,G.S.&H.Bhaskar,H.2004.TextbookofChordateZoology.Campus
Books,2vols.,xx, 964 p., figs.
 - Veena,2008.LowerChordata.(SonaliPubl.),374p.,tables,117figs.
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- **Verified and Approved by Dr.M.VANI HOD & BOS Chairperson
(Zoology)**

Choice Based Credit System
SEMESTER – III
Model Question Paper - 2024-2025
ZOOLOGY (MINOR)
PAPER: ANIMAL DIVERSITY- I BIOLOGY OF CHORDATES

Time: 3 Hrs.

Max Marks: 70

PART – A

Answer any Five of the following Questions in not more than 50 words each.

5 x 4 = 20 Marks

1. Tunicata
2. kangaroo
3. Dipnoi
4. Types of scales
5. Quill feathers
6. Apoda
7. Poisonous snakes
8. Aquatic mammals adaptations

I. Answer any Five of the following Questions and draw the labeled diagrams where ever necessary

5x 10 = 50 Marks

9. a. Explain the retrogressive metamorphosis and significance of Herdmania.

or

9.b. Compare the characters of petromyzon and myxine

10. a. Describe the structure and functions of brain of scoliodon

or

10.b write an essay on migration in fishes

11.a. describe the structure and functions of heart of frog.

Or

11.b. Describe the general characters of reptiles and classify them up to classes

12.a. Describe the respiratory system in birds

Or

12.b Write an essay on flight adaptations in birds

13.a Describe the general characters of mammals and classify them up to classes

Or

13.b. Write an essay on dentition in mammals

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III SEMESTER

(W.E.F. Academic Year 2024-25)

COURSE5:ANIMALDIVERISTY-IIBIOLOGYOF CHORDATES

PRACTICAL

Credits:1

2hrs/week

LEARNINGOBJECTIVES

- To understand the importance of preservation of museum specimens
- To identify animals based on special identifying characters
- To understand different organ systems through demo or virtual dissections
- To maintain an eat, labeled record of identified museum specimens

SYLLABUS:

1. Protochordata: *Herdmania, Amphioxus, Amphioxus T. S* through pharynx.
2. Cyclostomes: *Petromyzon and Myxine*.
3. Pisces
: *Pristis, Torpedo, Hippocampus, Exocoetus, Echeneis, Labeo, Catla, Clari us, Channa, Anguilla*.
4. Amphibia: *Ichthyophis, Amblystoma, Axolotllarva, Hyla*,
5. Reptilia: *Draco, Chamaeleon, Uromastix, Testudo, Trionyx, Russels viper, Naja, Krait, Hydrophis, Crocodile*.
6. Aves: *Psittacula, Eudynamis, Bubo, Alcedo*.
7. Mammalia: *Ornithorhynchus, Pteropus, Funambulus*.
8. **Dissections**-As per UGC guidelines
Scoliodon I
X and X, Cranial nerves
Scoliodon Brain
Mounting offish scales

Note:1. Dissections are to be demonstrated only by the faculty or virtual.
2. Laboratory Record work shall be submitted at the time of practical examination.

REFERENCE WEBLINKS:

- <https://nt7-mhe-complex-assets.mheducation.com/nt7-mhe-complex-assets/Upload-20190715/InspireScience6-8CA/LS15/index.html>
- <https://themammallab.com/>
- <http://abacus.bates.edu/acad/depts/biobook/LabConCh.htm>
- <https://virtualzoology.wordpress.com/scoliodon/>
- <http://www.zoologyresources.com/uploadfiles/books/dc64b77d8769325515d17c945e461b45.pdf>

Verified and Approved by Dr.M.VANI HOD & BOS Chairperson (Zoology)

CHOICE BASED CREDIT SYSTEM
II BSC- SEMESTER – III
Model Practical Question Paper - 2024-25
SUB: ZOOLOGY (Minor)
PAPER: ANIMAL DIVERSITY- I BIOLOGY OF CHORDATES

Time: 2 Hrs.

Max Marks: 50

1. Disect and display the *Scoliodon IX* and X, Cranial nerves and draw neat labeled diagram
10 marks
2. Identify the following spotters and draw neat labeled diagram 5x5 = 25 marks

A

B

C

D

E

3. Viva voce

5 marks

Certified Record

10 marks