AP STATE COUNCIL OF HIGHER EDUCATION

w.e.f. 2020-21 (Revised in April, 2020)

ZOOLOGY –SEMESTER II

PAPER – II: ANIMAL DIVERSITY – BIOLOGY OF CHORDATES

HOURS :60 (5X12) **Max. Marks:100**

Course Outcomes:

By the completion of the course the graduate should able to -

CO1 Describe general taxonomic rules on animal classification of chordates

CO2 Classify Protochordata to Mammalia with taxonomic keys

CO3 Understand Mammals with specific structural adaptaions

CO4 Understand the significance of dentition and evolutionary significance

CO5 Understand the origin and evolutionary relationship of different phyla from Prochordata to mammalia.

Learning objectives

1. To understand the animal kingdom .
2. To understand the taxonomic position of Protochordata to Mammalia.
3. To understand the general characteristics of animals belonging to Fishes to Reptilians.
4. To understand the body organization of Chordata.
5. To understand the taxonomic position of Protherian mammals.

ZOOLOGY SYLLABUS FOR II SEMESTER

PAPER – II: ANIMAL DIVERSITY – BIOLOGY OF CHORDATES

HOURS: 60 (5X12) **Max. Marks: 100**

Unit - I

General characters and classification of Chordata upto classes

Protochordata- Salient features of Cephalochordata , Affinities of Cephalochordata.

Salient features of Urochordata

Structure and life history of *Herdmania*

Retrogressive metamorphosis –Process and Significance

Unit - II

Cyclostomata, General characters, Comparison of*Petromyzon* and *Myxine*

Pisces : General characters of Fishes

Scoliodon: External features, Digestive system, Respiratory system, Structure and function of Heart, Structure and functions of the Brain.

Migration in Fishes

Types of Scales

Dipnoi

Unit - III

General characters of Amphibia

Classification of Amphibiaup to orders with examples.

3. 3 *Ranahexadactyla*: External features, Digestive system, Respiratory system, Structure and function of Heart, structure and functions of the Brain

Reptilia: General characters of Reptilia, Classification of Reptilia upto orders withexamples

Calotes:External features, Digestive system, Respiratory system, Structure and function of Heart, structure and function of Brain

Identification of Poisonous snakes and Skull in reptiles

Unit - IV

Aves General characters of Aves

Columba livia: External features, Digestive system, Respiratory system, Structure and function of Heart, structure and function of Brain

Migration in Birds

Flight adaptation in birds

Unit - V

General characters of Mammalia

Classification of Mammalia upto sub - classes with examples

Comparision of Prototherians, Metatherians and Eutherians

Dentition in mammals

Co-curricular activities (suggested)

- Preparation of charts on Chordate classification (with representative animal photos) and retrogressive metamorphosis
- Thermocol or Clay models of Herdmania and Amphioxus
- Visit to local fish market and identification of local cartilaginous and bony fishes
- Maintaining of aquarium by students
- Thermocol 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 Charts 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/lizards 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 mammals

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. SarasPlublication. 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. EkambaranathaAyyar, 1973. A manual of zoology. Part II. (S. ViswanathanPvt. 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, 2000. Modern textbook of zoology, Vertebrates. (Rastogi Publ., Meerut). 632 pages.
- E.L. Jordan & P.S. Verma, 1998. Chordate zoology. (S. Chand & Co.). 1092 pages.
- G.S. Sandhu, 2005. Objective Chordate Zoology. Campus Books, vii, 169 pp.
- Sandhu, G.S. & H. Bhaskar, H. 2004. Textbook of Chordate Zoology. Campus Books, 2 vols., xx, 964 p., figs.
- Veena, 2008. Lower Chordata. (Sonali Publ.), 374 p., tables, 117 figs.

ZOOLOGY MODEL PAPER FOR II SEMESTER

ZOOLOGY - PAPER - II

ANIMAL DIVERSITY – BIOLOGY OF CHORDATES

Time: 3 hrs **Max. Marks: 75**

I. Answer any FIVE of the following: **5x5=25**

Draw labeled diagrams wherever necessary

1. *Amphioxus*
2. Placoid scale
3. Quill feather
4. Prototheria
5. Anadromous migration
6. *Draco*
7. Emu
8. Apoda

II. Answer any FIVE of the following: **5x10=50**

Draw labeled diagrams wherever necessary

9. Explain the life history of Herdmania

OR

Explain the origin and general characters of chordates

10. Compare the characters of *Petromyzon* and *Myxine*

OR

Describe the structure of heart of *Scoliodon*

11. Describe the brain of *Ranahexadactyla*

OR

Explain the external features of *Calotes*

12. Write an essay on flight adaptations in birds

OR

Explain the respiratory system of *Columba livia*

13. Compare the characters of Metatheria and Eutheria

OR

Write an essay on dentition in mammals

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ZOOLOGY PRACTICAL SYLLABUS FOR II SEMESTER

ZOOLOGY - PAPER - II

ANIMAL DIVERSITY - BIOLOGY OF CHORDATES

Periods: 24 **Max. Marks: 50**

Learning Outcomes:

- To understand the taxidermic and other methods of preservation of chordates
- To identify chordates based on special identifying characters
- To understand internal anatomy of animals through demo or virtual dissections, thus directing the student for "empathy towards the fellow living beings"
- To maintain a neat, labeled record of identified museum specimens

OBSERVATION OF THE FOLLOWING SLIDES / SPOTTERS / MODELS

1. Protochordata :*Herdmania, Amphioxus, Amphioxus* T.S through pharynx.
2. Cyclostomata :*Petromyzon and Myxine.*
3. Pisces : *Pristis, Torpedo, Hippocoampus ,Exocoetus, Echeneis, Labeo, Catla, Clarius,Channa, Anguilla*.
4. Amphibia :*Ichthyophis, Amblystoma, Axolotl larva, 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.*

Dissections-

1. *Scoliodon*IX and X, Cranial nerves
2. *Scoliodon*Brain
3. Mounting of fish 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 BOOKS:

1. S.S.Lal, Practical Zoology – Vertebrata
2. P.S.Verma, A manual of Practical Zoology – Chordata