

ZOOLOGY SYLLABUS FOR I SEMESTER

PAPER – I: ANIMAL DIVERSITY – BIOLOGY OF NONCHORDATES

HOURS:60 (5X12)

Max. Marks: 100

UNIT I

- 1.1 Principles of Taxonomy – Binomial nomenclature – Rules of nomenclature
- 1.2 Whittaker's five kingdom concept and classification of Animal Kingdom.

Phylum Protozoa

- 1.3 General Characters and classification of protozoa up to classes with suitable examples
- 1.4 Locomotion, nutrition and reproduction in Protozoans
- 1.5 *Elphidium* (type study)

UNIT –II

Phylum Porifera

- 2.1 General characters and classification up to classes with suitable examples
- 2.2 Skeleton in Sponges
- 2.3 Canal system in sponges

Phylum Coelenterata

- 2.4 General characters and classification up to classes with suitable examples
- 2.5 Metagenesis in *Obelia*
- 2.6 Polymorphism in coelenterates
- 2.7 Corals and coral reefs

Phylum Ctenophora :

- 2.8 General Characters and Evolutionary significance (affinities)

Unit – III

Phylum Platyhelminthes

- 3.1 General characters and classification up to classes with suitable examples
- 3.2 Life cycle and pathogenicity of *Fasciola hepatica*
- 3.3 Parasitic Adaptations in helminthes

Phylum Nematelminthes

- 3.4 General characters and classification up to classes with suitable examples
- 3.5 Life cycle and pathogenicity of *Ascaris lumbricoides*

Unit – IV

Phylum Annelida

- 4.1 General characters and classification up to classes with suitable examples
- 4.2 Evolution of Coelom and Coelomoducts
- 4.3 Vermiculture - Scope, significance, earthworm species, processing, Vermicompost, economic importance of vermicompost

Phylum Arthropoda

- 4.4 General characters and classification up to classes with suitable examples
- 4.5 Vision and respiration in Arthropoda
- 4.6 Metamorphosis in Insects
- 4.7 *Peripatus* - Structure and affinities
- 4.8 Social Life in Bees and Termites

Unit – V

Phylum Mollusca

- 5.1 General characters and classification up to classes with suitable examples
- 5.2 Pearl formation in Pelecypoda
- 5.3 Sense organs in Mollusca

Phylum Echinodermata

- 5.4 General characters and classification up to classes with suitable examples
- 5.5 Water vascular system in star fish
- 5.6 Larval forms of Echinodermata

Phylum Hemichordata

- 5.7 General characters and classification up to classes with suitable examples
- 5.8 *Balanoglossus* - Structure and affinities

Co-curricular activities (suggested)

Preparation of chart/model of phylogenetic tree of life, 5-kingdom classification, *Elphidium* life cycle etc.

Visit to Zoology museum or Coral island as part of Zoological tour

Charts on life cycle of *Obelia*, polymorphism, sponge spicules

Clay models of canal system in sponges

Preparation of charts on life cycles of *Fasciola* and *Ascaris*

Visit to adopted village and conducting awareness campaign on diseases, to people as part of Social Responsibility.

Plaster-of-paris or Thermocol model of *Peripatus*

Construction of a vermicompost in each college, manufacture of manure by students and donating to local farmers

Models of compound eye, bee hive and terminarium (termitaria) by students

Visit to apiculture centre and short-term training as part of apprenticeship programme of the govt. Of Andhra Pradesh

Chart on pearl forming layers using clay or Thermocol

Visit to a pearl culture rearing industry/institute

Live model of water vascular system

Phylogeny chart on echinoderm larvae and their evolutionary significance

Preparation of charts depicting the feeding mechanism, 3 coeloms, tornaria larva etc., of *Balanoglossus*

REFERENCE BOOKS

1. **L.H. Hyman** '*The Invertebrates*' Vol I, II and V. – M.C. Graw Hill Company Ltd.
2. **Kotpal, R.L. 1988 - 1992** Protozoa, Porifera, Coelenterata, Helminthes, Arthropoda, Mollusca, Echinodermata. Rastogi Publications, Meerut.
3. **E.L. Jordan and P.S. Verma** '*Invertebrate Zoology*' S. Chand and Company.
4. **R.D. Barnes** '*Invertebrate Zoology*' by: W.B. Saunders CO., 1986.
5. **Barrington. E.J.W.**, '*Invertebrate structure and Function*' by ELBS.
6. **P.S. Dhama and J.K. Dhama**. Invertebrate Zoology. S. Chand and Co. New Delhi.
7. **Parker, T.J. and Haswell** '*A text book of Zoology*' by, W.A., Mac Millan Co. London.
8. **Barnes, R.D. (1982)**. *Invertebrate Zoology*, V Edition"

ZOOLOGY PRACTICAL SYLLABUS FOR I SEMESTER

ZOOLOGY - PAPER - I

ANIMAL DIVERSITY - BIOLOGY OF NONCHORDATES

Periods: 24

Max. Marks: 50

Learning Outcomes:

- 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 a neat, labeled record of identified museum specimens

Syllabus :

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

Protozoa: *Amoeba*, *Paramoecium*, *Paramoecium* Binary fission and Conjugation, *Vorticella*, *Entamoebahistolytica*, *Plasmodium vivax*

Porifera: *Sycon*, *Spongilla*, *Euspongia*, *Sycon*- T.S & L.S, Spicules, Gemmule
Coelenterata: *Obelia* – Colony & Medusa, *Aurelia*, *Physalia*, *Velella*, *Corallium*, *Gorgonia*, *Pennatulav.*

Platyhelminthes: *Planaria*, *Fasciola hepatica*, *Fasciolalarval* forms – Miracidium, Redia, Cercaria, *Echinococcusgranulosus*, *Taeniasolium*, *Schistosomahaematobiumvii.*

Nemathelminthes: *Ascaris*(Male & Female), *Drancunculus*, *Ancylostoma*, *Wuchereria*

Annelida: *Nereis*, *Aphrodite*, *Chaetopteurs*, *Hirudinaria*, Trochophore larva
Arthropoda: Cancer, Palaemon, Scorpion, *Scolopendra*, *Sacculina*, *Limulus*, *Peripatus*, Larvae - Nauplius, Mysis, Zoea, Mouth parts of male & female *Anopheles* and *Culex*, Mouthparts of Housefly and Butterfly. xiii.

Mollusca: *Chiton*, *Pila*, *Unio*, *Pteredo*, *Murex*, *Sepia*, *Loligo*, *Octopus*, *Nautilus*, Glochidium larva

Echinodermata: *Asterias*, *Ophiothrix*, *Echinus*, *Clypeaster*, *Cucumaria*, *Antedon*,
Bipinnaria larva

Hemichordata: *Balanoglossus*, Tornaria larva

2. Dissections:

1. Prawn: Appendages, Digestive system, Nervous system, Mounting of Statocyst

2. Insect Mouth Parts

3. Laboratory Record work shall be submitted at the time of practical examination

4. 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

5. Computer - aided techniques should be adopted or show virtual dissections

REFERENCE MANUALS:

1. Practical Zoology- Invertebrates S.S. Lal

2. Practical Zoology - Invertebrates P.S. Verma

3. Practical Zoology - Invertebrates K.P. Kurl

4. Ruppert and Barnes (2006) Invertebrate Zoology, 8th Edition, Holt
Saunders International Edition