ST.JOSEPH’S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

I SEMESTER  **ZOOLOGY**  TIME:4HRS/WEEK

Z 1502(3) **ANIMAL DIVERSITY – BIOLOGY OF NONCHORDATES**  MAX.MARKS:100

w.e.f. 20-21 (“20AH”) admitted Batch **SYLLABUS**

**OBJECTIVES :** To enable the students to

* Describe general taxonomic rules on animal classification.
* Categorise & classify the invertebrate fauna using taxonomic keys
* Recall the general characteristics of animals belonging to protozoa to Hemichordata.
* Summarise the social behavior and cooperation among insect species.
* Appraise the significance and economic importance of vermiculture.

**COURSE OUTCOMES:** By the end of the course, students will be able to

CO1 : Recall the basic concepts of systematic underlying the organization of invertebrates.

CO2 : Classify protozoa to Hemichordata with taxonomic keys, explain the structural organization.

CO3 : Summarize vermiculture and importance of vermicomposting.

CO4 : Illustrate the process of pearl formation and importance of pearl culture.

CO5: Discuss the helminth diseases, pathogenicity and the prevention.

**UNIT – I: PHYLUM PROTOZOA:**

1.1 Principles of Taxonomy – Binomial nomenclature – Rules of nomenclature

1.2 Whittaker’s five kingdom concept and classification of Animal Kingdom.

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–Structure & Life history, Importance of Alternation of Generations.

**UNIT – II: PHYLUM PORIFERA :**

2.1 General characters and classification up to classes with suitable examples

2.2 Skelton in Sponges

2.3 Canal system in sponges

**PHYLUM COELENTERATA :**

2.4 General characters and classification up to classes with suitable examples

2.5 Metagenesisin 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 pathogenecity of Fasciola hepatica

3.3 Parasitic Adaptations in helminthes.

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**PHYLUM NEMATHELMINTHES :**

3.4 General characters and classification up to classes with suitable examples

3.5. Life cycle and pathogenecity of Ascarislumbricoides

**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

**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. Dhami and J.K. Dhami. 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”.

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ST.JOSEPH’S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

I SEMESTER **ZOOLOGY**  TIME:2HRS/WEEK

Z 1552 (2) **ANIMAL DIVERSITY – BIOLOGY OF NONCHORDATES**  MAX.MARKS:50

w.e.f. 20-21(“20AH”) admitted Batch **PRACTICAL SYLLABUS – IA**

**OBJECTIVES:**

* Identify invertebrates based on special Identifying characters.
* Compare the hierarchical categories and understand their position classification.
* Observe the different organ systems through demonstration or virtual dissections.
* Maintain a neat, labeled record of identified museum specimens.
* **COURSE OUTCOMES:** By the end of the course, students will be able to
* CO1 : Describe and place the invertebrates according to their taxonomic position.
* CO2 : Be versatile in identification of museum specimens.
* CO3 : Reinforce observation and identification skills.
* CO4 : Develop insight about the importance of preservation of 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, Pennatula.

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

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

**Annelida:** Nereis, Aphrodite, Chaetopteurs, Hirudinaria, Trochophorelarva .

**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.

**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.

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