ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

(A Statutory body of the Government of Andhra Pradesh)

3rd, 4th and 5th floors, Neeladri Towers, Sri Ram Nagar, 6th Battalion Road,
Atmakur(V), Mangalagiri(M), Guntur-522 503, Andhra Pradesh
Web: www.apsche.org **Email**: acapsche@gmail.com

REVISED SYLLABUS OF B.Sc. (ZOOLOGY)
UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: THREE-YEAR B.Sc.

(Zoology)

(With Learning Outcomes, Unit-wise Syllabus, References, Co-curricular Activities & Model Q.P.)

For Fifteen Courses of 1, 2, 3 & 4 Semesters)

(To be Implemented from 2020-21 Academic Year)

Structure of ZOOLOGY Syllabus

(Under CBCS for 3-year B.Sc. Programme)

(With domain subject covered during the first 4 Semesters with 5 Courses)

YEAR	SEM	PAPER	TITLE	MARKS (100)		CREDITS
				MID SEMESTER	END SEMESTER	
I	I	I	Animal Diversity – I Biology of Non-Chordates	25	75	04
			Practical - I	25	75	01
	II	II	Animal Diversity – II Biology of Chordates	25	75	04
			Practical - II	25	75	01
II	III	III	Cell biology, Genetics, Molecular Biology & Evolution	25	75	04
			Practical - III	25	75	01
	IV	IV	Physiology, Cellular Metabolism & Embryology	25	75	04
			Practical - IV	25	75	01
		V	Immunology &Animal Biotechnology	25	75	04
			Practical - V	25	75	01

AP STATE COUNCIL OF HIGHER EDUCATION

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

ZOOLOGY – SEMESTER I

PAPER – I: ANIMAL DIVERSITY – BIOLOGY OF NONCHORDATES

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

CO2 Classify Protozoa toCoelenterata with taxonomic keys

CO3 Classify Phylum Platy hemninthes to Annelida phylum using examples from parasitic adaptation and vermin composting

CO4 Describe Phylum Arthropoda to Mollusca using examples and importance of insects and Molluscans

CO5 Describe Echinodermata to Hemi chordata with suitable examples and larval stages in relation to the phylogeny

Learning objectives

1. To understand the taxonomic position of protozoa to helminthes.
2. To understand the general characteristics of animals belonging to protozoa to hemichordata.
3. To understand the structural organization of animals phylum from protozoa to hemichordata.
4. To understand the origin and evolutionary relationship of different phyla from protozoa to hemichordata.
5. To understand the origin and evolutionary relationship of different phylum from annelids to hemichordates.

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

PhylumPorifera

2.1 General characters and classification up to classes with suitable examples

2.2 Skelton in Sponges

2.3 Canal system in sponges

PhylumCoelenterata

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

PhylumCtenophora :

2.8 General Characters and Evolutionary significance(affinities)

Unit – III

PhylumPlatyhelminthes

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

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

PhylumEchinodermata

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

PhylumHemichordata

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 phylogenic 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. 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"

ZOOLOGY MODEL PAPER FOR I SEMESTER

ZOOLOGY - PAPER - I

ANIMAL DIVERSITY – BIOLOGY OF NONCHORDATES

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

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

Draw labeled diagrams wherever necessary

1.

2.

3.

4.

5.

6.

7.

8.

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

Draw labeled diagrams wherever necessary

9.

OR

10.

OR

11.

OR

12.

OR

13.

OR

□□□□□

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, Pennatula*v.

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

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 e amination

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

RFERENCEMANUALS:

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