

ANNEXURE-IV

B.SC ZOOLOGY SYLLABUS UNDER CBCS w.e.f. 2023-24

B.Sc. Zoology Theory I Year (Semester -I)

DSC-I -Animal Diversity-Invertebrates

Total periods- 60

Instruction - 4 Hours/Week

No. of Credits -4 credits

Unit – I

(15 Periods)

1.1 Protozoa.

- 1.1.1. General characters and classification of Protozoa up to order levels with examples
- 1.1.2. Type study- *Elphidium*
- 1.1.3. Locomotion and Reproduction in Protozoa
- 1.1.4. Epidemiology of Protozoan diseases-Amoebiasis; Giardiasis; Leishmaniasis, Trichomoniasis and Malaria

1.2 Porifera

- 1.2.1. General characters and classification of Porifera up to order levels with examples
- 1.2.2. Type study-*Sycon*
- 1.2.3. Canal system in sponges and Spicules

Unit-II

(15 Periods)

2.1 Cnidaria

- 2.1.1. General characters and classification of Cnidaria up to order levels with examples
- 2.1.2. Type study-*Obelia*
- 2.1.3. Polymorphism in Siphonophora
- 2.1.4. Corals and Coral reefs

2.2. Platy helminthes

- 2.2.1. General characters and classification of Platy helminthes up to classes with examples
- 2.2.2. Type study-*Schistosoma*

2.3. Nemathelminthes

- 2.3.1. General characters and classification of Nemathelminthes up to classes with examples
- 2.3.2. Type study- *Wuchereria*
- 2.3.3. Parasitic Adaptations in Helminthes

UNIT-III

(15 Periods)

3.1. Annelida

- 3.1.1. General characters and classification of Annelida up to classes with examples
- 3.1.2. Type study-*Hirudinaria granulose*-External features, Digestive system, Circulatory system, Excretory system, Reproductive system.
- 3.1.3. Evolutionary significance of Coelome, Coelomoducts and Metamerism

3.2 .Arthropoda

- 3.2.1. General characters and classification of Arthropoda up to classes with examples
- 3.2.2. Type study-*Prawn*- External features, Digestive system, Respiratory system, Excretory system, Nervous system, Reproductive system.

- 3.2.3. Crustacean larvae
- 3.2.4. Insect metamorphosis
- 3.2.5. *Peripatus*-structure and affinities

UNIT-IV

(15 Periods)

4.1 Mollusca

- 4.1.1. General characters and classification of Mollusca up to classes with examples
- 4.1.2. Type study-*Pila*- External features, Digestive system, Respiratory system, Reproductive system
- 4.1.3. Pearl formation
- 4.1.4. Torsion and detorsion in gastropods

4.2. Echinodermata

- 4.2.1. General characters
- 4.2.2. Classification of Echinodermata up to classes with examples
- 4.2.3. Water vascular system in star fish
- 4.2.4. Echinoderm larvae and their significance

Suggested Readings:

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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Ch. Somendra

B.SC ZOOLOGY SYLLABUS UNDER CBCS w.e.f. 2023-24

B.Sc. Zoology Theory I Year (Semester –II)

DSC–II -Animal Diversity-Vertebrates

Total periods- 60

Instruction - 4 Hours/Week

No. of Credits -4 credits

UNIT-I

(15 Periods)

1.1 Hemichordata

1.1.1. General characters

1.2.2. Classification of Hemichordata up to classes with examples

1.1.3. Balanoglossus-Structure and affinities

1.2. Urochordata, Cephalochordata, Cyclostomata

1.2.1 Salient features of Urochordata

1.2.2. Retrogressive metamorphosis and its significance in Urochordata

1.2.3. Salient features of Cephalochordata

1.2.4. General characters of Cyclostomata and Comparison of the *Petromyzon* and *Myxine*

1.2.5. General characters and classification of chordata up to orders with examples

UNIT-II

(15 Periods)

2.1. Pisces

2.1.1. General characters of fishes

2.1.2. Classification of fishes up to order level with examples

2.1.3. *Scoliodon*-Respiratory, Circulatory and Nervous system

2.1.4. Types of scales and types of fins

2.1.5. Migration of fishes-Catadromous, Anadromous

2.2. Amphibia

2.2.1. General characters of Amphibians

2.2.2. Classification of Amphibians up to orders with examples

2.2.3. *Rana tigrina*- Respiratory, Circulatory and Nervous system

2.2.4. Parental care in Amphibian, Neoteny and Paedogenesis

UNIT-III

(15 Periods)

3.1. Reptilia

3.3.1. General Characters of Reptilia

3.1.2. Classification of Reptilia up to orders with examples

3.1.3. *Calotes*- Circulatory, Nervous system and Urinogenital system.

3.1.4. Temporal fosse in reptiles and its evolutionary importance

3.1.5. Distinguished characters of poisonous and non poisonous snakes

3.1.6. Types of snake Venoms-Neuro toxin, Haemo toxin

3.2. Aves

3.2.1. General characters of Aves

3.2.2. Classification of Aves up to orders with examples

3.2.3. *Columba livia* -Digestive system, Circulatory system, Respiratory system and

Nervous system.

3.2.4. Migration in Birds

3.2.5. Flight adaptations in Birds

UNIT-IV

(15 Periods)

4.1. Mammalia

4.1.1. General characters of Mammalia

4.1.2. Classification of Mammalia up to orders with examples

4.1.3. Rabbit- Digestive, Respiratory, Circulatory and Nervous system

4.1.4. Dentition in Mammals

4.1.5. Aquatic adaptations in Mammals

Suggested Readings

1. E.L. Jordan and P.S. Verma 'Chordate Zoology' -S. Chand Publications
2. Mohan P.Arora. 'Chordata-I. Himalaya publishing House Pvt.Ltd.
3. Marshal, Parker and Haswell 'Text book of Vertebrates' .ELBS and McMillan, England.
4. Alfred Sherwood Romer. Thomas S.pearson 'The Vertebrate Body, Sixth Edition, CBS College publishing. Saunders College Publishing.
5. George C. Kent, Robert K. Carr. Comparative Anatomy of the Vertebrates, 9th ed. McGraw Hill.
6. Kenneth Kardong Vertebrats: Comparative Anatomy, Function and Evolution,4th ed., McGraw Hill.
7. J.W.Young.The life of Vertebrates, 3rd ed, Oxford University Press.
8. Harvey Pough F,Christine M.Janis, B.Heiser, Vertebrate life,Pearson,6th ed, Pearson Education Inc.2002.

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Ch. Senaptha

B.Sc. ZOOLOGY SYLLABUS UNDER CBCS w.e.f. 2023-24

Zoology Practical Syllabus for I Semester

Core paper-I

Animal Diversity-Invertebrates

Instructions: 2 hr per week

No of Credits: 1

1. Study of Museum Slides / Specimens/ Models (Classification of animals up to orders)

- i. **Protozoa** : *Amoeba*, *Paramoecium*, *Paramecium* -Binary fission and Conjugation, *Vorticella*, *Entamoeba histolytica*, *Plasmodium vivax*.
- ii. **Porifera** : *Sycon*, *Euspongia*, *Euplectella*, *Sycon*-T.S & L.S, Spicules
- iii. **Coelenterata** : *Hydra*, *Obelia*-colony and medusa, *Aurelia*, *Physalia*, *Velella*, *Corallium*, *Gorgonia*, *Pennatula*, *Fungia*.
- iv. **Platyhelminthes** : *Planaria*, *Fasciola hepatica*, *Fasciola* larval forms-Miracidium, Redia, Cercaria, *Echinococcus granulosus*, *Taenia solium*, *Schistosoma haematobium*
- v. **Nemathelminthes** : *Ascaris* (Male and Female), *Dracunculus*, *Ancylostoma*, *Wuchereria*.
- vi. **Annelida** : *Nereis*, *Hetero neries*, *Aphrodite*, *Chaetopterus*, *Hirudinaria*, Trochophore larva
- vii. **Arthropoda** : *Cancer*, *Palaemon*, *Scorpion*, *Scolopendra*, *Sacculina*, *Limulus*, *Peripatus*, Crustacian Larvae- Nauplius, Mysis, Zoea, Mouth parts of male and female *Anopheles*, *Culex* and *Aedes*, Mouth parts of Housefly and Butterfly.
- viii. **Mollusca**: *Chiton*, *Pila*, *Unio*, *Pteredo*, *Dentalium* , *Sepia*, *Loligo*, *Octopus*, *Nautilus*, Glochidium larva.
- ix. **Echinodermata**: *Asterias*, *Ophiothrix*, *Echinus*, *Clypeaster*, *Cucumaria*, *Antedon*, Bipinnaria larva.

2. Dissections:

Computer aided techniques like virtual dissection software should be adopted to show dissections.

Prawn: Appendages, Digestive system, Nervous system, mounting of statocyst.

Insect mouth parts- Female and male *Anopheles* mosquito, Housefly, Butter fly

3. Laboratory record (Submitted at the time of the practical examination)

4. An "Animal album" containing minimum of 15 photographs, cut outs, with appropriate write up about the above mentioned taxa. Different taxa /topic may be given to different sets of students for this purpose.

Suggested Manuals

1. Practical Zoology-Invertebrates S.S. Lal
2. Practical Zoology-Invertebrates P.S.Verma
3. Practical Zoology-Invertebrates K.P. Kurl

B.Sc. ZOOLOGY SYLLABUS UNDER CBCS w.e.f. 2023-24

Zoology Practical Syllabus for II Semester

Core paper-2

Animal Diversity-Vertebrates

Instructions: 2 hr per week

No of Credits: 1

Study of Museum slides/specimens/models(Classification of animals up to orders)

1. **Hemichordata:** *Balanoglossus*, Tornaria larva
2. **Protochordata:** Ascidia, Amphioxus, Amphioxus T.S. through Pharynx
3. **Cyclostomata:** *Petromyzon*, *Myxine*, Ammocoetus larva
4. **Pisces:** *Scoliodon*, *Sphyrna*, *Pristis*, *Torpedo*, *Channa*, *Pleuronectes*, *Hippocampus*, *Exocoetus*, *Echieneis*, *Labeo*, *Catla*, *Clarius*, *Anguilla*, **Scales:** Placoid, Cycloid, Ctenoid.
Collection and study of different types of Scales
5. **Amphibia:** *Ichthyophis*, *Amblystoma*, *Siren*, *Hyla*, *Rachophorus*, *Bufo*, *Rana*, Axolotal larva
6. **Reptilia:** *Draco*, *Chamaeleon*, *Gecko*, *Uromastix*, *Vipera russelli*, *Naja*, *Bungarus*, *Enhydrina*, *Typhlops*, *Testudo*, *Trionyx*, *Crocodylus*, *Ptyas*
7. **Aves:** *Archaeopteryx*, *Passer*, *Psittacula*, *Bubo*, *Alcedo*, *Columba*, *Corvus*, *Pavo*, *Coracias benghalensis*

Collection and study of different types of feathers: Quill, Contour, Filoplume, Down

8. **Mammalia:** *Ornithorhynchus*, *Tachyglossus*, *Pteropus*, *Funambulus*, *Manis*, *Loris*, *Hedgehog*.
Histology: T.S. of Liver, Pancreas, Kidney, Stomach, Intestine, Lungs, Artery, Vein, Bone T.S., Spinal Cord, Testes and Ovary.

Osteology:

1. **Rabbit-** Axial skeleton system (Bones of skull and vertebral Column)
2. **Varanus, Pigeon and Rabbit-** Appendicular skeleton system (bones of limbs and girdles)

Dissections of Labeo / Tilapia:

1. Digestive system
2. Brain, Weberian ossicles
3. V, VII, IX, X cranial nerves

Computer aided techniques like virtual dissection software should be adopted to show dissections.

Laboratory record

Animal Album-Containing minimum of 15 photographs, cutouts with appropriate write-up about the above mentioned taxa. Different taxa /topics may be given to different sets of students for this purpose.

Suggested manuals

1. S.S. Lal., Practical Zoology-Vertebrata
2. P.S. Verma, A manual of Practical Zoology- Chordata
3. Freeman & Bracegirdle, An atlas of Embryology