

**SANT GADGE BABA AMRAVATI UNIVERSITY, AMRAVATI**  
**SHRI PUNDLIK MAHARAJ MAHAVIDYALAYA, NANDURA (Rly.)**  
**DEPARTMENT OF ZOOLOGY**  
**B. Sc-I, SEMESTER-I**  
**REVISED SYLLABUS-2022**  
**SUB: LIFE AND DIVERSITY OF ANIMALS (NON-CHORDATA)**

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There shall be following paper and practical for B.Sc. Part-I Semester One examination. The syllabus is based on 6 theory periods and six practical periods per week (Total 75-80 theory Sessions and 25 practical sessions during the complete semester). There shall be one compulsory paper of 3 hours duration, in theory as stated below and practical examination extending for four hours. Every examinee shall offer the following paper of 100 marks, (Out of which 80 marks will be for written examination and 20 marks for internal assessments) and practical examination of 50 marks. Candidates are required to pass separately in theory and practical examination.

**Marks**

1) Paper-I: Life and diversity of Animals (Non-Chordata)	
Theory (Written) .....	80
Internal assessments .....	20
2) Practical: .....	50
<b>Total :</b>	<b>150 Marks</b>

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**THEORY**

**UNIT-I:**

1. Introduction and Classification of Non-Chordata.
2. Phylum Protozoa: General characters.
3. Type study: Plasmodium vivax: Structure, Life-cycle.
4. Parasitic protozoan and human diseases': Malaria, Amoebiasis,

**UNIT-II:**

1. Phylum Porifera: General Characters.
2. Type study: Scypha: Habits, habitat and Distribution, cell types, spicules & Structure and significances of canal system.
3. Phylum Coelenterata: General Characters,
4. Type study: Metridium: Habits and habitat, External features, Gastro-vascular cavity, Mesenteries, Corals and coral reefs.

**UNIT-III:**

1. Phylum Platyhelminthes: General Characters.
2. Type study: Fasciola hepatica: Habits and habitat, External features, Excretory, Reproductive system and Life cycle.
3. Phylum Aschelminthes: General Characters.
4. Type study, Ascaris lumbricoides: Habits and habitat, External features, Digestive, Excretory, Reproductive system and Life cycle.

**UNIT-IV:**

1. Phylum Annelida: General Characters.
2. Type study: Leech: External features, Digestive, and Reproductive system.
3. Phylum Arthropoda: General Characters
4. Type study: Cockroach: Habits and habitat, Digestive system, Excretory, Respiratory system, Reproductive system.

**UNIT-V:**

1. Phylum Mollusca: General Characters.
2. Type study: Pila globose: Habits and habitat, External features (Shell and Body), Digestive, Respiratory and Reproductive system.
3. Phylum Echinodermata: General Characters.
4. Type study: Asterias: Habits and habitat, External features, Water vascular system.

## **UNIT-VI:**

1. Phylum Hemichordata: General Characters, Body organization of Balanoglossus, Affinities of Balanoglossus with Non-Chordata, and Chordata.
  2. Parasitic adaptations in Helminthes: Morphological and physiological
  3. Larval forms and their significance
  4. Amphiblastula, Planula, Trochophore, Bipinnaria, Brachiolaria.
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## **PRACTICAL**

**Two practical per week each of 3 period's duration. The Examination shall be of 4 hrs duration and of 50 marks.**

1. **Observation, Classification** up to classes and sketching of the following animals, (Specimens or Models):
  - Phylum Protozoa: Plasmodium trophozoite, Euglena, Entamoeba histolytica.
  - Phylum Porifera: Sycon, Bath sponge, Euplectella.
  - Phylum Coelenterata: Obelia, Aurelia, Tubipora.
  - Phylum Helminthes: Taenia, Ascaris (male & female).
  - Phylum Annelida: Nereis, Earthworm, Leech,
  - Phylum Arthropoda: Prawn, Aranea, Scolopendra, Julus, Moth, Mosquito.
  - Phylum Mollusca: Chiton, Pila, Dentalium, Unio, Octopus.
  - Phylum Echinodermata: Antedon, Holothuria, Sea star, Brittle star
  - Phylum Hemichordata: Balanoglossus
2. **Study of Permanent slides:** L.S.Sycon, nematocyst, Ascaris egg, T.S. Ascaris through Testis and ovaries, T.S.Leech through crop, Compound eye of insect, Radula, Gill lamella and Osphradium of Pila, Scolex and Gravid Proglottid of Taenia.
3. **Anatomical Study** through Computer Aided Techniques, Video Clipping Models, Photographs and other available resources:
  - a) Leech/Earthworm: Alimentary canal, Reproductive system, Nervous system,
  - b) Grasshopper/Cockroach: digestive system, Nervous system, Reproductive system.

c) Culture of Hydra and Volvox (To be given to all students)

**4. Mountings:**

a) Mosquito (Culex and Anopheles): wings, legs, mouth parts

b) Housefly: Mouth parts, legs, wings

c) Paramecium and Volvox

**Distribution of Marks during Practical Examination:**

<b>Time : 4 hrs.</b>	<b>Marks</b>
i. Identification and comments on spots (1-8) – 4 specimens, 4 slides.....	12 Marks
ii. Labelling of Anatomical diagrams provided (Two).....	10 Marks
iii. Permanent stained micro preparation.....	08 Marks
iv. Study tour diary - .....	04 Marks
v. Permanent stained micro preparation Submitted by examinee.....	04 Marks
vi. Certified class record - .....	05 Marks
vii. Check list of 20 locally available invertebrate fauna.....	02 Marks
viii. Viva- voce .....	05 Marks
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<b>Total: - ..... 50 Marks</b>	

**References**

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- 2) Ayyar, E.K. and T.N.Ananthakrishnan, Manual of Zoology Vol.I (Invertebrata), Part-I & II S. Viswanathan (Printers and Publishes) Pvt. Ltd. Madras.
- 3) Jordan, E.L. and P.S.Verma Invertebrate Zoology, S.Chand and Co., Ltd. Ram Nagar, New Delhi.

- 4) Parker and Haswell, Text book of Zoology, Vol. I (Invertebrata), A.Z.T.B.S. Publishers and Distributors, New Delhi – 110051.
- 5) Waterman, Allyn J. et al., Chordate structure and Function, Mac Millan and Co Newyork.
- 6) S.N.Prasad : Text Book of Invertebrate Zoology.
- 7) Vishwanathan : Invertebrate Zoology
- 8) Majpuria : Invertebrate Zoology.
- 9) Dhami and Dhami : Non-chordate Zoology.
- 10) Bains Prasad: Indian Zoological memoir. Pila.
- 11) R.L.Kotpal : Modern Text Book of Invertebrate Zoology.
- 12) Malviya M.K. Invertebrate Zoology, by Rajdhool publications.
- 13) S.S.Lal, Practical Zoology, Invertebrate.
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- 15) Verma and Agarwal Practical Zoology, Invertebrate
- 16) Barnes R.D. Invertebrate Zoology -(W.B. Saunders Co.)
- 17) P.G.Puranik and Thakur, Invertebrate Zoology