

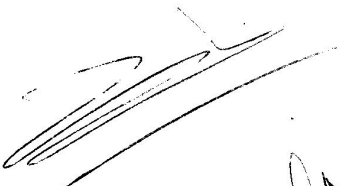
**DEPARTMENT OF ZOOLOGY**  
**UNIVERSITY OF LUCKNOW**  
**LUCKNOW**

**M.Sc. Zoology Practical - Semester I-Non Chordata-2021 onwards**

**PRACTICAL A**

**Maximum marks-100**

1. Major dissection	20
2. Minor dissection	15
3. Permanent preparation & Identification	10
4. Identify and comment upon spot 1-10 ( 10 Spots )	25
5. Viva-voce	15
6. Record	15

  
Prishy

# M.Sc. Zoology, Semeste-I Practical Syllabus-

## Practical- A: Non Chordata

### 1. Major Dissections

*Sepia*- Nervous system  
*Aplysia*- Nervous system  
*Mytilus*-Nervous System

### 2. Minor Dissections

(i) *Palaemon* - Nervous system  
(ii) *Pila* - Nervous system  
(iii) *Unio* - Nervous system

### 3. Take out and Mount Permanent Preparation:

(i) *Pheretima* Pharyngeal nephridia, Septal nephridia, Ovary  
(ii) *Palaemon* Hastate plate, Statocyst  
(iii) *Sepia.Aplysia & Pila* Radula  
(iv) *Lamellidens* Gills

### Mounting material to be provided

#### PORIFERA

(i) Gemmule of *Spongilla*  
(ii) Spongin fibres  
(iii) Spicules

#### COELENTERATA

(i) *Sertularia*  
(ii) *Campanularia*  
(iii) *Obelia*  
(iv) *Hydra*

#### ARTHROPODA

(i) *Mysis (W.M.)*  
(ii) *Pediculus*  
(iii) *Haematopinus*  
(iv) *Zoea*  
(v) *Daphnia*

#### MOLLUSCA

(i) Gill lamella of *Lamellidens*

## PREPARED SLIDES

### PROTOZOA

*Opalina*  
*Nyctotherus*  
*Euglena*

*Noctiluca*  
*Vorticella*  
*Actinosphaerium*

*Trypanosoma*  
*Monocystis*

*Polystomella*  
*Paramecium*

### PORIFERA

Spongin Fibers  
Triradiate spicules

Monoaxon spicules L.S. *Leucosolenia*

Gemmule of *Sycon*

### COELENTERATA

Hydra ( T.S., L.S. )  
*Sertularia*  
*Nausithoe*

*Muggiaea*  
Tentaculocyst of *Aurelia*  
*Obelia* medusa

Ephyra of *Aurelia*  
*Campanularia*  
*Hydractina*

Scyphistoma of *Aurelia*  
Strobila of *Aurelia*  
*Alcyonium* polyp

### PLATHYHELMINTHES

#### (TURBELLARIA )

*Planaria*

#### CESTODA

*Taenia solium* (Gravid & Gravid)    *Cotugnia* ( Scolex, mature & gravid seg. )  
T.S. *Taenia* (mature proglottid)    *Dipylidium* ( Gravid & Mature )    *Echinococcus*  
*Raillietina* ( Scolex, Mature, & Gravid seg. )

#### TREMATODA

*Opisthorchis*    Redia and Cercaria of *Fasciola*    T.S. *Fasciola* ( Through cirrus sac )  
T.S. *Fasciola* ( Through Testis )    T.S. *Fasciola* ( Through ovary )    T.S. *Fasciola* ( ventral sucker )  
*Paramphistomum*    *Gastrothylax*

### NEMATHELMINTHES

*Ancylostoma* ( Male & Female )    T.S. *Ascaris* ( Male & Female )

## **ANNELIDA**

1. *Nereis* parapodium
2. *Heteronereis* parapodium
3. *Histriobdella*
4. *Dero*
5. *Saccocirrus*
6. T.S. Leech through crop
7. T.S. earthworm through different regions
8. T.S. *Nereis* through trunk region

## **ARTHROPODA ( prepared slides )**

1. Zoea larva
2. Nauplius larva
3. Sting apparatus of honey bee
4. *Cimex*
5. *Pediculus humanus*
6. *Mysis*
7. *Daphnia*
8. *Cyclops*
9. *Metanauplius*

## **MOLLUSCA**

1. T.S.gill lamella of *Pila*
2. T.S.gill lamella of *Lamellidens*
3. *Chiton*
4. Glochidium larva
5. Radula of *Pila*

## **ECHINODERMATA ( prepared slides )**

1. Bipinnaria larva
2. Echinopluteus larva
3. Pentacrinoid larva

## MUSEUM SPECIMENS

### PORIFERA

*Euspongia officinalis*  
*Tethya*  
*Ephydatia*

*Euplectella*  
*Hyalonema*

*Cliona*  
*Chalina*

*Spongilla*  
*Leucosolenia*

### COELENTERETA

*Alcyonium*  
*Physalia*  
*Pennatula*  
*Millepora*

*Vellela*  
*Fungia*  
*Gorgonia* ( Colony & Skeleton )  
*Metridium*

*Corallium ruberum*  
*Hydractinia* on gastropod shell  
*Corymorpha*

*Porpita*  
*Tubipora*  
*Stylaster roseus*

### ANNELIDA

*Arenicola*  
*Bonellia* ( Female )  
*Aphrodite*

*Lumbricus*  
*Sabella*

*Heteronereis*  
*Macrobdella*

*Glycera*  
*Pontobdella*

### ARTHROPODA

Termite Queen  
*Limulus*  
*Thyroglytus*

Scorpion  
*Lycosa*

*Eupagurus*  
*Buthus*

*Sacculina* on crab  
*Scolopendra*

### MOLLUSCA

*Teredo*  
*Octopus*  
*Doris*

*Solen*  
*Nautilus* (shell)  
*Aplysia*

*Pinctada* ( Pearl oyster )  
*Argonauta*  
*Sepia*

*Dentalium*  
*Chiton*

### ECHINODERMATA

*Astropecten*  
*Diadema*  
*Thyone*

*Asterias forbesis*  
*Cucumaria*  
*Ophioderma*

*Antedon*  
*Echinus*  
*Luidia*

*Cucumaria*  
*Holothuria*

**M.Sc. Semester I Practical exercise**  
**Practical B: Animal Physiology, Biochemistry and Cell Biology**  
**2021-2022**

**Time: 5.0 hours**

**Maximum Marks: 100**

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**Physiology and Haematology**

1. To determine the bleeding time (BT) of human blood.
2. To determine the clotting time (CT) of human blood.
3. To observe the osmotic fragility/resistance and permeability of red blood cells.
4. To prepare a peripheral blood film/smear to identify different types of blood cells.
5. To count the Red blood cells (RBC) using haemocytometer.
6. To count the Total White blood cells (WBC) using haemocytometer (TLC).
7. To estimate amount of haemoglobin in human blood using haemoglobinometer
8. To demonstrate ocular dominance in humans.
9. To determine Breath Holding Time (BHT).
10. To record the temporal body temperature in free days versus working day.
11. To estimate the temporal basal pulse rate in free days versus working day.

**Biochemistry and Cell/Molecular Biology**

1. Preparation of solutions and buffers.
2. Identification and/or separation of different amino acids using ascending paper chromatography.
3. Measurement of acid value of different oil samples in order to determine their quality.
4. To verify Beer's law and calculate the molar extinction coefficient by using riboflavin.
5. To prepare the standard curve for protein estimation using Bovine Serum Albumin.
6. Preparation of Nerve cell by Leishman/Methylene Blue stain
7. Preparation of Striated muscle fibre by methylene blue staining
8. Preparation of Buccal epithelial cell by methylene blue staining
9. Preparation and study of stages of mitosis in onion root tip using Acetocarmine stain.
10. Molecular model preparation of macromolecules: Bases, nucleotides and nucleosides, amino acids, dipeptides using bead and stick model.

**Distribution of marks**

1. Physiological Experiment	10
2. Haematological exercise	10
3. Preparation of buffers & solutions	05
4. Biochemical experiment 1	15
5. Chromatography	10
6. Cytological preparation	10
7. Model preparation	10
8. Class record & Project	10
9. <i>viva voce</i>	<u>20</u>
	<b>100</b>

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14/05/2022