ZOOLOGY PRACTICAL

Duration : 5 hours **M.M. 75**

S.No.	Exercise	Regular	Ex-Students
1	Major dissection	18	25
2	Cell Biology/ Developmental Biology exercise	09	12
3	Mounting/ Slide preparation	08	08
4	Spots(10)	20	20
5	Viva-voce	10	10
6	Record	10	—
	Total :-	**75**	**75**

1. General survey of invertebrates (museum specimens):

The student is required to know classification, habit and habitat, economic importance etc.

A Protozoa : *Entamoeba, Polystomella, Monocystis, Euglena, Noctiluca, Leishmania, Trichomonas, Trypanosoma, Nyctotherus, Paramecium, Vorticella,* various stages of *Plasmodium.*

Porifera : *Scypha, Hyalonema, Euplectella, Spongilla, Euspongia.*

C Coelenterata : *Physalia, Porpita, Aurelia, Rhizostoma, Alcyonium, Corallium, Gorgonia, Pennatula, Madrepora, Metridium*

D Platyhelminthes and Aschelminthes : *Dugesia, Fasciola, Taenia, Schistosoma, Dracunculus, Ascaris* (male and female), *Wucheraria, Enterobius*

E Annelida : *Nereis, Heteronereis, Aphrodite, Arenicola, Chaetopterus, Pontobdella, Hirudinaria, Pheretima.*

F Onychophora : *Peripatus.*

G Arthropoda : *Palaemon, Limulus, Aranea, Palamnaeus, Lepas, Balanus, Apus, Sacculina, Eupagurus, Carcinus, Lepisma, Pediculus, Schistocerca, Bombyx, Xenopsylla, Apis, Cimex, Julus, Scolopendra, Ixodes, Sarcoptes, Cyclops.*

		:	*Mytilus, Chiton, Teredo, Turbinella, Laviculus, Patella, Limax, Helix, Doris, Aplysia, Dentalium, Nautilus, Sepia, Octopus, Loligo, Pecten, Solen, Pila, Pinctada.*
I	Echinodermata	:	*Asterias, Pentaceros, Antedon, Ophiothrix, Holothuria.*
J	Hemichordata	:	*Balanoglossus, Saccoglossus.*

II. Study of the permanent slides, sections passing through different regions of animals and developmental stages.

1	Protozoa	:	Blood smears showing malarial parasite. *Paramecium*: Binary fission, conjugation.
2	Porifera	:	T.S. and L.S. of *Sycon*, spicules, spongin fibres and gemmules
3	Coelenterata	:	*Obelia* (colony and medusa), planula, scyphistoma and ephyra larvae of *Aurelia*, T.S. of mesentry of *Metridium*

4	Platyhelminthes	:	Miracidium, sporocyst, redia and cercaria larvae of *Fasciola*, scolex of *Taenia*, W.M. of mature and gravid proglottids of *Taenia*, hexacanth and cysticercus larvae of *Taenia*.
5	Aschelminthes	:	T.S. of *Ascaris* (male and female).
6	Annelida	:	T.S. of *Nereis* through different regions, parapodia of *Nereis* and *Heteronereis*. Trochophore larva.
7	Arthropoda	:	V.S. of compound eye, nauplius, zoea, megalopa larvae and *Mysis*.
8	Mollusca	:	T.S. of gill lamella and T.S. of shell of *Lamellidens*, glochidium larva.
9	Echinodermata	:	T.S. of arm, tubefeet and pedicellaria, bipinnaria larva of starfish, echinopluteus larva.
10	Hemichordata	:	Tornaria larva.

III Dissections :

1.	*Pheretima*	:	General anatomy, alimentary canal, nervous, excretory and reproductive systems.

2. *Palaemon* : Appendages, general anatomy, alimentary cana and nervous system.

3. *Periplaneta* : General anatomy, alimentar canal, nervous system an reproductive systems.

4. *Pila* : Organs of pallial complex, nervous system.

IV Mountings: Permanent preparation of th following:

1 Protozoa : *Euglena, Paramecium*, rect ciliates, *Polystomella.*

2 Porifera : Sponge spicules, spongin fibres and gemmules.

3 Coelenterata : *Obelia* (colony and medusa).

4 Platyhelminthes : Proglottid of *Taenia.*

5 Annelida : Parapodia of *Nereis* and *Heteronereis*, ovary, septa nephridia and setae (*in sit* of earthworm.

6 Arthropoda : Statocyst and hastate pla of prawn, salivary glands and tracheae of cockroac W.M. of *Cyclops, Daphnia,* mouth parts of any 4 insect *Culex, Anopheles* male an female, housefly, cockroa and honey bee.

7 Mollusca : Gill lamella, glochidium larva, osphradium and radula of *Pila.*

Cell Biology

1. Prepared slides of mitochondria, Golgi bodies, centrosome, different stages of mitosis.

2. Buccal smear preparation for localization of mitochondria and Golgi complex using vital stains.

3. Demonstration of chromosomes in the buds of *Tradescantia / Aloe vera* and in root tips of *Allium cepa.*

4. Squash preparation of polytene chromosomes.

Developmental Biology

1 W.M. of eggs, early cleavage stage, T.S. of blastula and gastrula of frog.

2 Study of chick embryo : 18 hours, 24 hours, 36 hours, 48 hours and 72 hours.

3 T.S. of ovary and testis.

4 Sperm smear to study the structure of sperm.

5 Foetus with placenta.

REFERENCE BOOKS (LATEST EDITIONS) :

LIFE AND DIVERSITY OF ANIMALS (INVERTEBRATES)

1 Hickman C.P.Jr.,F.M. Hickman and L.S. Roberts Integrated Principles of Zoology, Mosby Colleg Publication, St. Louis.

2 Ayyar, E.K. and T.N.Ananthakrishnan, Manua of Zoology, Vol.1 (Invertebrata), Parts I and II. S Viswanathan (Printers and Publishers) Pvt. Ltd Madras.

3 Jordan, E.L. and P.S.Verma : Invertebrat Zoology, S.Chand & Co. Ltd., Ram Nagar, Ne Delhi. (English and Hindi Editions).

4 Parker and Haswell : Text Book of Zoology, Vol. (Invertebrata), A.Z.T.B.S. Publishers an Distributors, New Delhi- 110051

5 Ismail, S.A.: Vermicology : The Biology Earthworms, Orient Longman, India.

6 Kotpal, RL., Agarwal and Khetrapal : Modern Tex Book of Zoology : Invertebrates, Rastog Publications, Meerut. (English and Hindi Editions

7 Storer, T.I. and Usinger, K.L. : General Zoology Tata McGraw- Hill Publishing Co., New Delhi.

8 Simpson, GG : Principles of Taxonomy, Oxford and IBH Publisher Co. New Delhi.

CELL AND DEVELOPMENTAL BIOLOGY :

9 Alberts, Bray, Lewis, Raff, Roberts and Watson : Molecular Biology of the Cell (Garland).

10 Balinsky : An Introduction to Embryology (CBS College Publishers)

Grant : Biology of Developing systems (Holt, Reihart and Winston).

Gilbert : Developmental Biology (Sinauer)

Lodish, H., et al . : Molecular Cell Biology (Freeman).

PRACTICAL :

Verma, P.S. : A manual of practical Zoology S.Chand and Co. Ltd., Ram Nagar, New Delhi (English and Hindi Editions).

Lal, S.S. : Practical Zoology , Invertebrates, Rastogi Publication, Meerut (English and Hindi Editions).