

MSC SEM-I P-I

COURSE CODE:18.270

Department of Zoology

M.Sc.Part-I Semester-I

Program- Zoology

Course-I Structure and function of invertebrates

Objective: Comparative anatomical radiation in invertebrates

Learning outcomes- Students who successfully completed this course will be able to-

1. Explain different types of coelom and their role in evolution.
2. Understand locomotion in protozoa
3. Describe different types of feeding adaptations in lower metazoa.
4. Describe adaptive radiation of various respiratory and excretory organs.
5. Explain comparative study of nervous system from primitive to higher invertebrates.
6. Describe parasitic and free-swimming larval forms.

Assessment :

1. One theory exam related to above course.
2. Few exercises related to above course in practical exam
3. Seminars
4. Quiz

Books recommended

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|----|---------------------------|---|--------------------|
| 1. | Text Book of Invertebrate | - | R.L. Kotpal |
| 2. | Biology of Non Chordates | - | H.C. Nigam |
| 3. | Invertebrate Zoology | - | Jordon and Verma |
| 4. | The Invertebrate | - | L.H. Human |
| 5. | Elements of Taxonomy | - | E. Mayer |
| 6. | A Text Book of Zoology-I | - | Parker and Haswell |

MSC SEM-I P-II

COURSE CODE:18.280

M.Sc. Part-I Semester-I

Program- Zoology

Course-II Molecular Cell Biology

Objective: To study Bio-membranes, cytoskeleton, signalling, cell cycle, protein trafficking and apoptosis

Learning outcomes- Students who successfully completed this course will be able to-

1. Know about transport across membranes and membrane potential.
2. Understand the structure and dynamics of microtubules, filaments, cilia and flagella
3. Describe signaling from plasma membrane to nucleus via receptors and messengers
4. Explain cyclin and cycline dependent kinases, its regulation in cell cycle
5. Describe membrane proteins, golgi sorting, post translational modifications
6. Know what is programmed cell death

Assessment :

1. One theory exam related to above course.
2. Few exercises related to above course in practical exam
3. Seminars
4. Quiz

Books recommended

1. Molecular Cell Biology - Karp
2. Molecular Cell Biology - B. Albert
3. Cell Biology & Genetics - P.K. Gupta
4. Cytology - Veer BalaRastogi

MSC SEM-I P-III

COURSE CODE:18.290

M.Sc. Part-I Semester-I

Program- Zoology

Course- III Toxicology

Objective- Introduction of environmental toxicants and their penetration, translocation, biotransformation in animal body across different membrane barriers including antidotal procedure.

Learning outcomes- Students who successfully completed this course will be able to-

1. Describe number of toxicants present in surrounding atmosphere and their impacts.
2. Understand the properties of chemicals and biological processes which modulate the toxicokinetics of chemical in the body.
3. Understand that how heavy metals and pesticides are harmful for various living organisms.
4. Get knowledge the science underlying testing for the ability of chemicals to elicit adverse human health effects.
5. Understand the relation between doses and duration for the exposure of toxicants.
6. Understand about antidotal procedure in case of acute poisoning.

Assessment :

1. One theory exam related to above course.
2. Few exercises related to above course in practical exam
3. Seminars
4. Quiz

Books recommended

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|----|---|---|-------------------|
| 1. | Environment & Toxicology | - | P.D. Sharma |
| 2. | Concepts of Toxicology | - | Dr. Omkar |
| 3. | Elements of Toxicology | - | Narain and Narain |
| 4. | Fundamentals of Environmental Biology | | Biswarup Mukharj |
| 5. | Fundamentals of Ecology | - | Eugene Odum |
| 6. | Environmental Studies and Environmental | | |
| 7. | Engineering | - | H.H. Singh |

MSC SEM-I P-IV

COURSE CODE:18.300

M.Sc. Part-I Semester-I

Program- Zoology

Course-IV Biostatistics, Tools and Techniques for Biology

Objective- To study the different techniques useful for biological aspects and uses of biostatics in Biology

Learning outcomes- Students who successfully completed this course will be able to-

1. Understand numerical aspects of biology using different statistical methods.
2. Know the uses of mean, median and mode in daily life
3. Solve the genetic problem by using probability, Chi-square and binomial distribution.
4. Understand the different types of Microscopes (Light, Phase and Electron) to study the different levels of cellular details.
5. To identify the diseases caused by viruses and bacteria by using ELISA and PCR techniques.
6. Know about the principles and uses of separation techniques (Chromatography, Centrifugation and Gel Electrophoresis)

Assessment :

1. One theory exam related to above course.
2. Few exercises related to above course in practical exam
3. Seminars
4. Quiz

Books recommended

1. Molecular Cell Biology - Karp
2. Tools and Technique - D. banerjee.
3. Text book of Biostatics - M.P.Arora.
4. Text book of Biostatics - ManjuPandey
5. Text book of Biochemistry- Zubay

MSC SEM-I P-V

COURSE CODE:18.310

M.Sc. Part-I Semester-I

Course-Practical

Objective- Study and experiments related to four courses of its program.

Learning outcomes -Students who successfully completed this course will be able to-

1. Describe number of specimens and slides.
2. Dissect the animal to study the different organs and organ systems.
3. Get knowledge about the instruments (microscopes, autoclaves, centrifuge, incubator, etc) and slide preparation.
4. Prepare different grades of alcohol required in permanent mounting of materials.
5. Understand the lethal and sub lethal doses of toxicants to test their toxicity.
6. Maintain records of experiments that learn in lab.

Assessment

1. One practical exam related to above four courses.
2. Maintenance of records related to above course in practical exam.
3. Seminar
4. Quiz

Books recommended

- | | | |
|-----------------------------------|---|-----------------------------|
| 1. Practical Zoology (Vol.-I) | - | Yadav-Varshney |
| 2. Practical Zoology-Invertebrate | - | P.S. Verma |
| 3. Practical Zoology-Invertebrate | - | S.S. Lal |
| 4. Tools and Techniques | - | Wilson & Walker |
| 5. Advanced Practical Zoology | - | P.S. Verma& P.C. Srivastava |

MSC SEM-II P-I

COURSE CODE:18.320

M.Sc. Part-I Semester II

Program- Zoology

Course-IMolecular Biology

Objective: Fundamentals of molecular biology as basic science that has its goal “An explanation of life processes at the sub cellular and molecular level.” It open new areas of study and revolutionizing the health and Pharmaceutical Industry.

Learning outcomes- Students who successfully completed this course will be able to-

1. Understand the importance of DNA in life process.
2. Compare the complexity in the role of DNA and RNA of prokaryotic and eukaryotic cells
3. Understand the necessary co- and post- transcriptional modifications.
4. Understand the importance of triplet codons (Genetic Codes) and other important machinery in prokaryotic and eukaryotic translations (Protein Synthesis).
5. Explain the significance of DNA repair mechanics which maintain the accuracy of genes.
6. Demonstrate advanced knowledge in the field of molecular cell biology and pharmaceutical industries.

Assessment :

1. One theory exam related to above course.
2. Few exercises related to above course in practical exam
3. Seminars
4. Quiz

Books recommended

1. Molecular Cell Biology - Karp
2. Molecular Cell Biology - B. Albert
3. Cell Biology & Genetics - P.K. Gupta
4. Cytology - Veer BalaRastogi
5. Fundamentals Of Molecular Biology -Avinash and KakoliUpadhyay
6. Biochemistry - PowarChatwal

MSC SEM-II P-II

COURSE CODE:18.330

M.Sc. Part-I Semester-II

Program- Zoology

Course-II Endocrinology

Objective- This course cover the coordination of body functions by chemical messengers, its structure, synthesis, secretion, transport and clearance from the blood.

Learning outcome- Students who successfully completed this course will be able to-

1. Explain the term hormone, its chemistry and Feedback mechanism.
2. Describe hypothalamic –hypophysial axis, octapeptide and tropic hormones chemistry, regulation of their secretion and physiology.
3. Know the biosynthesis, regulation and physiological roles of T3 & T4 and how parathormone controls bone calcium and phosphate.
4. Describe 4S, 3F, emergency hormones and how adrenocortical hormones control sodium ion, potassium ion, and protein metabolism.
5. Describe how insulin and glucagon controls glucose metabolism in the blood.
6. Describe clinical manifestation of conditions resulting from hyper and hypo secretion of each endocrine gland.

Assessment :

1. One theory exam related to above course.
2. Few exercises related to above course in practical exam
3. Seminars
4. Quiz

Books Recommended

1. Human Physiology-C.C. Chatterjee
2. Medical Physiology- Gyton and Hall
3. Animal Physiology - Goyal and Sastry
4. Medical Physiology - Ganong
5. Endocrinology - Mac Hadley and Jon E. Levine

MSC SEM-II P-III

COURSE CODE:18.340

M.Sc. Part-I Semester-II

Program Zoology

Course-III Physiology of Vertebrates

Objective- To introduce the student biological basis of the study of physiology, integration refers to the overlap of many functions of the systems of the human body, as well as, its accompanied form.

Learning outcomes- Students who successfully completed this course will be able to-

- 1.Explain how food particles are digested and what are the enzymes involved.
- 2.How respiratory organs coordinate.
- 3.Explain how urine is formed & body fluid is balanced.
- 4.Describe membrane potential, nerve conduction and how stimulus propagates throughout the body.
- 5.Describe muscle type and mechanism of contraction.
- 6.Get knowledge about the medical field too.

Assessment :

1. One theory exam related to above course.
2. Few exercises related to above course in practical exam
3. Seminars
4. Quiz

Books Recommended

- | | | | |
|----|----------------------------------|---|-------------------|
| 1. | Animal Physiology & Biochemistry | - | H.R. Singh |
| 2. | Animal Physiology & Biochemistry | - | VasantikaKashyap |
| 3. | Human Physiology (Vol.-I, II) | - | C.C. Chatterjee |
| 4. | Animal Physiology | - | M.P. Arora |
| 5. | Medical Physiology | - | Guyton and Hall |
| 6. | Medical Physiology | - | Ganong |
| 7. | Animal Physiology | - | Shastri&Goyal |
| 8. | Biochemistry | - | Powar and Chatwal |

MSC SEM-II P-IV

COURSE CODE:18.350

M.Sc. I Semester-II

Program Zoology

Course-IV Biochemistry

Objective-Bimolecular study in the living system.

Learning outcome- Students who successfully completed this course will be able to-

1. Describe importance of pH, buffer in the living system. How it work to maintain the homeostasis of the body.
2. Describe the importance of thermodynamic principle in the living system.
3. Know about structure, function, metabolism and significance of carbohydrate, protein and lipid.
4. Understand the biological significance of macromolecules.
5. Understand about enzymes and their catalyzed reactions
6. Explain the kinetics of enzyme actions

Assessment

1. One theory exam related to above course.
2. Few exercises related to above course in practical exam.
3. Quiz

Books (Recommended)

1. Fundamental of Biochemistry - J.L. Jain
2. Animal Physiology & Biochemistry - R.A. Agrawal
3. Biochemistry - Lehninger
4. Harper's Biochemistry - Harper (W.Rodwell, P. Anthony)
5. Biochemistry - Powar and Chatwal

MSC SEM-II P-V

COURSE CODE:18.360

M.Sc. I Year Semester II

Program Zoology

Course- Practical

Objective- Study and experiments related to all four course materials.

Learning outcomes- Students who successfully completed this course will be able to-

1. Dissect the albino rat to know about different endocrine glands and their histological studies by prepared slides.
2. Isolate DNA contents and demonstrate electrophoresis to show DNA bands.
3. Estimate haemoglobin percentage, bleeding time, clotting time, blood group, Packed Cell Volume (PCV), Mean Corpuscular Hb (MCH), Mean Cell Volume (MCV) etc.
4. Observe and count RBCs no., WBCs no., blood pressure and ECG of students.
5. Detect the presence and absence of carbohydrate, protein and lipid in given sample, action of salivary amylase, separation of amino acids by paper chromatography
6. Maintain the class records and to present the seminar.

Assessment

1. One practical exam related to above four courses.
2. Maintenance of records related to above course in practical exam.
3. Seminar
4. Quiz

Books recommended

- | | | |
|-----------------------------------|---|-----------------------------|
| 1. Practical Zoology (Vol.-I) | - | Yadav-Varshney |
| 2. Practical Zoology-Invertebrate | - | P.S. Verma |
| 3. Practical Zoology-Invertebrate | - | S.S. Lal |
| 4. Tools and Techniques | - | Wilson & Walker |
| Advanced Practical Zoology | - | P.S. Verma& P.C. Srivastava |

MSC SEM-III P-I

COURSE CODE:18.370

M.Sc.Part-II Sem III

Program- Zoology

Course-I Comparative anatomy of chordates

Objective: Comparative anatomical radiation in vertebrates

Learning outcomes-The student successfully completed this course will be able to-

1. Brief Introduction of different Chordates and their taxonomic position in animal kingdom.
2. Explain that how skin modify as per different adaptations of Chordates
3. Explain how remarkable changes occurs in heart, aortic arches from aquatic to terrestrial animals.
4. Explain evolutionary changes from perforated pharynx (gills) to lungs.
5. How jaws are suspended from skull in primitive chordates to higher chordate.
6. How according to habit and habitat structure of brain and kidney changes successively.

Assessment

1. One practical exam related to above four courses.
2. Maintenance of records related to above course in practical exam.
3. Seminar
4. Quiz

Books Recommended

- | | | | |
|----|------------------------------------|---|-----------------|
| 1. | Comparative anatomy of Vertebrates | - | Mohan P. Arora |
| 2. | Biology of Chordates | - | H.C. Nigam |
| 3. | Vertebrate Zoology | - | Jordon &Verma |
| 4. | Chordate Zoology | - | P.S.Verma |
| 5. | Text Book of Zoology-II | - | Parker &Haswell |

MSC SEM-III P-II

COURSE CODE:18.380

M.Sc. Part-II Semester-III

Program Zoology

Course-II Molecular Cytogenetic

Objective: Introducing to students all aspect of chromosome biology and application of molecular cytogenetic technique used in biology and medicine.

Learning Outcome: - Students who successfully completed this course will be able to-

1. Describe the structure of condensed eukaryotic chromosome and sex chromosome of Drosophila and human.
2. Comprehended the effect of chromosomal abnormalities in genetic disorder.
3. Explain the different technique, Flow cytometry, FISH and Chromosome Painting.
4. Explain key concept of genome organization in prokaryotes and eukaryotes and human beings.
5. Describe the transposable element and its significance in prokaryotes.
6. Explain the Conjugation, transformation and transduction in bacterial cells.

Assessment:

1. One theory exam related to above course.
2. Few exercises related to above course in practical exam
3. Seminars
4. Quiz

Books recommended

- 1.Genetics - Gardener
- 2.Molecular Cell Biology - B. Albert
- 3.Cell Biology & Genetics - P.K. Gupta
4. Genome – T.A. Brown
- 5.Cytology - Veer BalaRastogi

MSC SEM-III P-III

COURSE CODE:18.390

M.Sc. Part-II Semester-III

Program Zoology

Course-III Population Genetics, Evolution and Animal Behavior

Objective- To study the behaviour of animals is the final objective of all other branches of biology. Population genetics attempts to describe how the frequency of the alleles which control the trait change over time.

Learning outcomes- Students who successfully completed this course will be able to-

1. Understand the Hardy-Weinberg theory used to explain the theory of evolution.
2. Understand the Hardy-Weinberg equilibrium that allelic frequencies will stay the same in absence of evolutionary agents.
3. Develop skill in observing and recording animal behavior.
4. Describe Ethology has, thus, made important contributions to other disciplines like anthropology, sociology, psychology, physiology, environmental biology, sociobiology etc.
5. Describe the mechanisms by which evolution occurs.
6. Provide detailed explanations of the processes of evolution by mutation, migration, genetic drift, non random mating and natural selection.

Assessment:

1. One theory exam related to above course.
2. Few exercises related to above course in practical exam
3. Seminars
4. Quiz

Books Recommended

1. Evolution – Strickberger
2. Population Genetics – Strickberger
3. Animal Behaviour – John Alcock
4. Animal Behaviour – ReenaMathur
5. Animal Behaviour – H.S. Gundevia and H. G. Singh
6. Introduction to Evolution – Moody

MSC SEM-III P-IV

COURSE CODE:18.400

M.Sc. II Year Semester III

Program Zoology

Course-IV Biology of Vertebrate Immune system

Objective- This course covers the molecular and cellular basis of the development and function of the immune system in states of health and diseases.

Learning outcomes- Students who successfully completed this course will be able to-

1. Understand that our body is like a castle.
2. Differentiate innate and adaptive immunity.
3. Understand different cells (T-lymphocytes, B-lymphocyte, neutrophils, macrophages, NK cells) and organs involved in defense mechanism.
4. Understand the properties of antigen/immunogens, structure, function and classes of antibody with Ag-Ab reaction.
5. understand the classes of MHC, disease susceptibility, cytokines and complement system
6. understand the different varieties of vaccines and way of immunization (active and passive).

Assessment :

1. One theory exam related to above course.
2. Few exercises related to above course in practical exam
3. Seminars
4. Quiz

Books recommended

- | | | |
|----|------------------------------|----------------|
| 1. | Immunology | -Kuby |
| 2. | Biotechnology and Immunology | - P.K. Gupta |
| 3. | Medical Physiology | -Guyton& Hall |
| 4. | Immunology | - St. Thomas |
| 5. | The Immune System | - Peter Parham |

MSC SEM-III P-V

COURSE CODE:18.410

M.Sc. Part-II Semester-III

Program- Zoology

Course- Practical

Objective- Study and experiments related to all four course materials.

Learning outcomes- Students who successfully completed this course will be able to-

1. Able to observe the morphological feature of the Chordates to show the taxonomic position in animal kingdom .And also observe the photo-tactic and geotactic responses in house fly.
2. The comparative Histological study of different classes with the help of permanent slides.
3. Understand the articulated and disarticulated bones of tetrapod.
4. Dissect the animal to show arterial,venous and nervous system.
5. Able to know about the human karyotype.
6. They able to understand about the Review and literature related to microbiology, physiology, toxicology fishery biology etc. and maintain the class record.

Assessment

1. One practical exam related to above four courses.
2. Maintenance of records related to above course in practical exam.
3. Seminar
4. Quiz

Books (Recommended)

- | | | |
|--|---|-----------------------------|
| 1. Practical Zoology (Vol.-II) | - | Yadav-Varshney |
| 2. Practical Zoology-Chordate | - | P.S. Verma |
| 3. Practical Zoology-Vertebrate | - | S.S. Lal |
| 4. Advanced Practical Zoology (Vol.-III) | - | P.S. Verma& P.C. Srivastava |

MSC SEM-IV P-I

COURSE CODE:18.420

M.Sc. Part-II Semester-IV

Program Zoology

Course-I Microbiology

Objective- To study the different microorganisms which is pathogenic to human being and related disease, symptoms, diagnosis and control.

Learning outcomes- Students who successfully completed this course will be able to-

1. Get knowledge about the different ways of classification of microbes.
2. Understand the different types of antibiotics used to control the growth of bacteria.
3. Understand the different types of culture media used for cultivation of microbes.
4. Understand the different sterilization techniques and its principle like Laminar Air flow, Autoclave, Heat and cold sterilization.
5. Understand the different types of pathogenic viruses infecting the human beings.
6. Understand the different disease causing bacteria and its mode of action , diagnosis and its control.

Assessment :

1. One theory exam related to above course.
2. Few exercises related to above course in practical exam
3. Seminars
4. Quiz

Books recommended

1. Medical Microbiology - Anantanarayan
2. Medical Microbiology - Atlas
3. Microbiology - Prescott
4. Microbiology : R.C. Dubey
5. Practical Microbiology: GopalNath

MSC SEM-IV P-II

COURSE CODE:18.430

M.Sc. Part-II Sem IV

Program- Zoology

Course-II Gamete Biology

Objectives: This course covers gametogenesis and their hormonal aspect, IVF and prevention techniques of gamete fusion.

Learning outcomes-The students who successfully completed this course will be able to-

- 1.Explain how male gamete is formed and who controlsthem.
- 2.Explain female gamete formation, endocrinology and their release.
- 3.Explain isolation of gametes and their fertilization In Vitro condition.Application of embryo transfer technique and stem cell transfer.
4. Know about the abnormal embryo and how anatomical abnormalities may come at the time of birth.
- 5.Understand about pregnancy and lactation hormones.
- 6.Explain how population is controlled by using different contraceptives methods.

Assessment :

1. One theory exam related to above course.
2. Few exercises related to above course in practical exam
3. Seminars
4. Quiz

Books recommended

- 1.Chordate Embryology – P.C.Jain
2. Biotechnology –B.D.Singh
- 3.Biotechnology –P.K. Gupta
4. Embryology -Balinsky

MSC SEM-IV P-III

COURSE CODE:18.440

M.Sc. Part-II Semester IV

Program- Zoology

Course- Special paper I Functional Morphology of Teleost Fishes

Objective: An aspect of fish physiology which promote, facilitate and influence the best possible standards of fisheries management. The course presents an introduction to physiological adaptations in fish relation to their environment.

Learning outcomes- Students who successfully completed this course will be able to-

1. Provide the necessary practical skills to undertake basic research in fish biology.
2. Provide the technical and general knowledge necessary for competent fisheries management.
3. Describe how to improve fish growth and development.
4. Describe physiological processes in fish including digestion, respiration, acid-base balance, osmoregulation, growth, gonadal hormones and reproduction and adaptations to temperature.
5. Describe how different physiological process in fish adapted in their environment.

Assessment :

1. External theory exam related to above course.
2. Few exercises related to above course in practical exam
3. Project work
4. Seminars
5. Quiz

Books recommended

1. Fish Physiology - W.S. Hoar and D.J. Randall
2. Ichthyology -K. F. Lagler
3. Fish Biology and Fisheries – S. S. Khanna
4. Fish Biology and Indian Fisheries – R. P. Parihar
5. Fish Physiology -Manju Tempre
6. Fish and Fisheries - Pandey and Shukl

MSC SEM-IV P-IV

COURSE CODE:18.450

M.Sc. Part-II Semester IV

Program- Zoology

Course- Special paper II -Fishery Biology and Ecology

Objective: Fundamentals of fishery biology and fish ecology for promotion of fish culture and the production of protein rich food for society.

Learning outcomes- Students who successfully completed this course will be able to-

- 1). Know about fish culture in India and also understand the natural spawning and induced breeding.
- 2.) Analyze physical and chemical properties of pond water and control pond biota and predatory fishes.
- 3). Observe and control the different kinds of fish diseases.
- 4). Understand the adaptation of fishes to different mode of life.
- 5). Understand interrelationship between fishes and abiotic and biotic environment, pollution of fishery water, planktons in relation to fish production.
- 6). Prepare and maintain different kinds of ponds for fish culture which would finally enable them to start their own business.

Assessment :

1. One theory exam related to above course.
2. Few exercises related to above course in practical exam
3. Seminars
4. Quiz

Books recommended

1. Fish and Fisheries of India- V.G. Jhingran
2. Fish Physiology – W.S. Hoar and D.J. Randall
3. Ichthyology –K. F. Lagler
4. Fish Biology and Fisheries – S. S. Khanna
5. Fish Biology and Indian Fisheries – R. P. Parihar
6. Fish Physiology – ManjuTempre
7. Ecology of Fishes- G.V. Nikolskys
8. Fish and Fisheries –Pandey and Shukla

MSC SEM-IV P-V

COURSE CODE:18.460

M.Sc. Semester-IV

Program- Zoology

Practical Practical

Objective- Study and experiments related to all four course materials.

Learning outcomes- Students who successfully completed this course will be able to-

1. Able to acclimatize the animals in lab condition, collect sample of water for bacterial culture. And do experimental work for their project related topic and finally they make a report.
2. Able to get Knowledge about different national park, sanctuaries and institute during studies visit which provided to them an opportunity to choose their future profession after completion of degree and also learn attitude with teacher and classmate very well.
3. Study and observe the different developmental stages by embryological slides and prepare slides for various stages of chick embryo.
4. Understand the different instrument required for microbiological culture and prepare culture media for bacterial growth.
5. Collection and identification of different species of teleost and get knowledge about adaptation in fishes according to different mode of life.
6. Dissect the any teleost to show Weberian ossicles, air bladder, accessory respiratory organ, internal ear, circulatory system and nervous system. Maintain the class records according to general and special course material.

Assessment :

1. One practical exam related to above four courses.
2. Maintenance of records related to above course in practical exam.
3. Project Report and Presentation
4. Tour report

Books recommended

- 1 Natural History Of Fishes and Systematics Of Freshwater Fishes of India - Dutta and Munsii
- 2 Fishes of UP and Bihar -Gopalji Srivastava
- 3 Practical Microbiology - Dubey and Maheshwary

- 4 Practical Microbiology - C P Baveja
- 5 Medical laboratory technology - V.H. Talib
- 6 Practical Zoology- vertebrate - P.S. Verma
- 7 Wallogoattu -Tondon
- 8- Tools and Techniques - Wilson & Walker