

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.

***T. Y. B. Sc. Zoology Syllabus
(New Course from June - 2008)***

This Syllabus is to be completed by assigning three periods of 55 minutes per paper per week for theory and one practical of four periods per paper per week.

For practicals the class should be divided in batches of fifteen students only. There will be one paper in written examination of three hours duration and one practical of more than five hours duration.

Pattern of Examination:

- (1) Theory Written (Ext.280 Marks & Int. **120** Marks)
- (2) Practical (Ext.140 Marks & Int. **60** Marks)
- (3) Theory Written in CAN (fisheries) (Ext.**70** Marks & Int. **30** Marks)

<u>Theory Written</u>	<u>Duration</u>	<u>Mark System</u>	
		<u>External</u>	<u>Internal</u>
Paper – VI	3 Hrs.	70	30
Paper – VII	3 Hrs.	70	30
Paper – VIII	3 Hrs.	70	30
Paper – IX	3 Hrs.	70	30
I. D. S. (FISHERIES)	3 Hrs.	70	30

<u>Practicals:</u>	<u>Duration</u>	<u>Marks System</u>	
		External	Internal
Practical – I (Based on Paper – VI)	More than 5 Hrs.	35	15
Practical – II (Based on Paper – VII)	More than 5 Hrs.	35	15
Practical – III (Based on Paper – VIII)	More than 5 Hrs.	35	15
Practical – IV (Based on Paper – IX&X Excursions, Projects, Review Paper, Submission, etc...)	More than 5 Hrs.	35	15

There shall be a major educational excursion OR minor excursions submissions which is compulsory. The observations made by the candidates during the educational excursion will be recorded in the relevant journal for the practicals. Such excursion shall be arranged on the working days of the College.

The candidate will record the observation relating to practical and will be signed periodically by a member of the laboratory staff. The candidate will have to produce a certificate from the Head of the Department that he / she has carried out the experiment satisfactorily.

The journal as well as submissions will be produced at the time of examination and these will be taken into consideration while Assigning the marks.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.

T. Y. B. Sc. Zoology Syllabus – Paper - VI
(New Course from June- 2008)
Non - Chordates

- Unit - I Taxonomy of non-chordates phyla to be studied up to order.
- Unit - II Study of the following animal types with reference to the structure and functions of various organs of all systems :
Scorpion, Sepia & Star fish.
- Unit -III Amplification of non-chordate phyla
- Protozoa : Nutrition & Economic Importance.
- Porifera : Canal system, skeletal system & reproduction.
- Coelenterata: Polymorphism, coral & coral reefs.
- Helminthes : Parasitism & morphological adaptations.
- Annelida : Metameric segmentation, coelomoducts & Nephridia.
- Arthropoda : Respiration, excretion, Neurohormonal-regulation of moulting and Ecdysis, crustacean larvae and significance thereof. Social Insects: Honey Bee, Termite, Ant & Wasp.
- Mollusca: Modification of foot, torsion & detorsion in gastropoda.
- Echinodermata: Water - vascular system, larval forms & Evolutionary significance thereof.
- Unit -IV Phyllogenetic relationships of the following minor phyla and General organization: Brachiopoda, Chaetognatha, Endoprocta, & Ectoprocta.

Practical – I (Based on paper - VI)

A- Classification of following animals upto order.

Volvox, ceratium, entamoeba, polystomella, plasmodium, opalina, balantidium, leucosolenia, hyalonema, euspongia, obelia, millipora, physalia, valella, aurelia, rhizostoma, tubipora, alcyonium, cerianthus, pennatula, virgularia, adamsia, zoanthus, favia, fungia, astrea, clinorches, filaria, trichinella, sabella, serpula, arenicola, eurythoe, aphrodite, polynoe, acanthobdella, apus, daphnia, cyclops, argulus, lepas, cypris, squilla, hippa, sacculina, limulus, mantis, dragon fly, ear-wig, mosquito, ant, beetle, tick, mite, dentalium, heliotis, patella, nautilus, oyster, mytilus, doris, cyprea, teredo, solen, octopus, loligo, astropecten, strongylocentrotus, synapta, sand-dollar, holothurian, sagritta, bugula, pleurobranchia.

B- Dissection:

Sepia: - Digestive & nervous system. Mountings of chromatophore, spermatophore, jaws & radula.

C- Study of permanent slides:

L. S. & T. S. Of sycon & leucosolenia, sponge spicules and gemmules, crustacean larva & echinoderm larva, tornaria.

D- Study of some aquatic invertebrates like euglena, paramoecium, vorticella, hydra, Daphnia & Cyclops from the culture.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.

T. Y. B. Sc. Zoology Syllabus - Paper – VII

(New Course from June - 2008)

(Chordates, Comparative Anatomy and Histology)

Unit - I

- A. Taxonomy of chordate to be studied up to order, including Protochordata.
- B. Origin of chordates.

Unit - II Study of the following animal types:

- A. (1) Labeo (2) Calotes
- B. Cranial nerves in Scoliodon.

Unit - III Comparative Anatomy:

- A. (1) Aortic arches (2) Vertebral column
(3) Brain.
- B. Integumentary derivatives like scales, feathers and tooth.

Unit -IV Amplification of Chordates:

- (1) Pisces : - Dipnoi, Coelocanth, Parental care& air bladder.
- (2) Amphibia : - Adaptive radiation, Parental care& Neoteny
- (3) Reptilia : - Mesozoic reptiles, Rhyncocephalia and its phyllogenetic Importance.
: - Structure of plastron and carapace in turtle.
- (4) Aves : - Migration, Ratitae, Air sacs
: - Modification of beak and feet.
- (5) Mammalia : - Dentition, Marsupialia, Primates, Cetaceans& Proboscidea.

- Unit - V Histology : - Pituitary, Thymus, Thyroid, Parathyroid, Adrenal, Ovary& Testis.

Practical – II (Based on paper - VII)

- A** - **Classification of following animals up to order.**
- * Oikopleura, Salpa, Doliolum, Lamprey, Myxine, Hammer - headed Shark, Trunk fish, Pristis, Protopterus, Exocoetus, Pipefish, Anabas, Solefish, Polyodon, Eel, Siren, Pterois, Necturus, Triton, Urotyphlus, Alytes, Rhacophorus, Pipa, Tortoise, Chamaeleon, Uromastix, Sea-snake, Echis, Archaeopteryx, Woodpecker, Parrot, Roller, Kite, Robin, Kiwi, Horn owl, Rabbit, Hedge hog, Loris Mongoose, Scaly anteater.
- * Study of Mesozoic reptiles like Brontosaurus, Stegosaurus, Iguanodon, Dimetrodon, Allosaurus, and Rhamphorhynchus.
- B** - **Study of following animal types.**
- * Scoliodon: - Cranial nerves, Internal ear and eye muscles,
Bony fish: - Digestive, Urinogenital system & Brain.
- C** - Histology: - Study of permanent slides of pituitary, Thyroid, Thymus, Parathyroid, Adrenal, ovary&testis.
- D** Study of parental care in Amphibia (charts/models/photographs)
- E** - **Comparative Study :-**
- (1) Vertebral column in Shark, Frog, Varanus, Pigeon and Rabbit.
 - (2) Dentition in Dog, Cat, Horse, Rabbit, Rat & man.
 - (3) Types of feather.
 - (4) Types of scales.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.
Third Year B. Sc .Zoology Syllabus - Paper - VIII
(New Course from June- 2008)
(Biochemistry and Animal Physiology)

I - Biochemistry

- An elementary knowledge of carbohydrates, Lipids, Proteins and Enzymes.

- General structure of carbohydrates, lipids and proteins.

- Enzymes

- (i) Introduction, Definition and chemical nature.
- (ii) Nomenclature and classification.
- (iii) Properties of enzymes.
- (iv) Mechanism of enzyme action.
- (v) Factors affecting enzyme activity.
- (vi) Enzyme inhibition.
- (vii) Co-enzymes.

II (A) Metabolism: - Introduction: - General account of,

(i) Carbohydrate metabolism:-

Glycolysis, Krebs cycle oxidative phosphorylation (ETS or Biological oxidation), Glycogenesis, Glycogenolysis, Glyconeogenesis

(ii) Lipid metabolism:-

- Glycerol metabolism
- Fatty acid metabolism and lyses by β - oxidation
- Hormonal control of lipid metabolism

(iii) Protein metabolism :-

- Urea formation (Ornithine cycle)
- Hormonal control of protein metabolism.

(B) Physiology: Respiration:-

- (i) Aquatic & terrestrial respiratory mechanism.
- (ii) Hypoxia (iii) O_2 dissociation Curve.

(C) Circulation

- (i) Structure of mammalian heart, properties of cardiac muscles & internal circulation (systematic, pulmonary & coronary)
- (ii) Cardiac cycle & cardiac output.
- (iii) Stroke volume (iv) Blood pressure
- (v) E. C. G (vi) Blood coagulation
- (vii) Hormonal, ionic & nervous regulation of heart beat.

- (D) Endocrinology: -
- (i) Definition
 - (ii) Chemical nature and kinds of hormones.
 - (iii) Mechanism of hormone action.
 - (iv) Regulation of hormone secretions.
 - (v) Hormones of Pituitary gland, Thyroid gland, Parathyroid gland, Pancreas, Adrenal gland, Gastrointestinal hormones ; Testis and Ovary.

Practical- III (Based on Paper-VIII)

- (A) Detection of Carbohydrates and proteins: - Glucose, Fructose, Maltose, Lactose & Sucrose.-Albumin and Casein.
- (B) Preparation of Atomic models :-
Glucose, Fructose, Galactose, Maltose, Lactose, Sucrose, Valine, Threonine, Glycine, Alanine & Glycerol.
- (C) Separation of amino acids by paper chromatography.
- (D) Haematology:-
 - (a) Total RBC Count in human blood
 - (b) WBC differential count.
- (E) Identification:-
 - (a) Study of charts
 - Osazone test(Slide)
 - Glycogenesis
 - Glycolysis
 - Gluconeogenesis
 - Glycogenolysis
 - Oxidative phosphorylation.
 - (b) Study of laboratory equipment such as :
 - Water bath, Centrifuge, Colorimeter, Microtome, Balance, Lactometer, Sphygmomenometer, Thoma pipette of RBC count & Haemocytometer.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.***T. Y. B. Sc. Zoology Syllabus – Paper – IX******(New Course from June- 2008)******(Cytology, Genetics, Embryology and Environmental Biology, etc.)***

Unit – I

CYTOLOGY

(A)

Tools and Techniques:

- (i) Electron microscope
- (ii) Fluorescence microscope
- (iii) Phase contrast microscope
- (iv) Paper Chromatography
- (v) Electrophoresis
- (vi) Centrifugation
- (vii) DNA Staining

(B)

Methods for Cytological and Cytochemical Analysis:

- (i) Examination of living cells.
- (ii) Fixation
- (iii) Embedding and sectioning
- (iv) Cytological staining

Summary: Observation of living and fixed cells.

Unit – II

GENETICS

(A)

Gene structure and Functions:

Gene concept, Location and size of genes, role of genes, chemical composition and the numbers. Fine (ultra) structure of Genes, Jumping genes, split genes, Sex chromatin.

(B)

Mutations:

- (i) Chromosomal Aberrations
- (ii) Polyploidy
- (iii) Metabolic disorders, Gene mutations.

(C)

Genetic code and protein synthesis.

Unit – III

EMBRYOLOGY AND REPRODUCTIVE BIOLOGY

(A)

Gametogenesis, Fertilization, Estrous and Menstruous cycles, Placenta and Placentation.

(B)

Study and Development of chick.

- (i) Fertilization, cleavage, Blastulation, Gastrulation, Formation of germ layers and primitive streak.
- (ii) Structure of 24, 36, 42, 48, 50, 60&72 hours of chick embryo.

UNIT-IV FORENSIC SCIENCE:

Dactylography, Footprints, Tattoomarks, Deformities, Occupational marks.

UNIT-V ANIMAL BEHAVIOUR : (i) insect pheromones (ii) BioluminescenceUNIT-VI WILD LIFE CONSERVATION & MANAGEMENT:

Introduction to National Parks & Sanctuaries, Govt. authorities, causes of depletion of wild life in India.

Conservation projects: Gir lion, Tiger, Musk deer & Elephant.

Practical- IV (Based on Paper - IX)

- (I) Cytology : (a) Preparation of Barr body
(b) Preparation of temporary mount of Giant Chromosome from *Drosophila* or Dipteran's larvae.
- (II) Genetics : Karyotyping: (Aberrations in Human Chromosomes by charts)
- Klinefelter's syndrome, Down's syndrome, Philadelphia's syndrome, Turner's syndrome, Cri-du-chat syndrome.
- (III) Chick Embryology : (i) Study of permanent slides of chick embryo Up to 60 hours.
- (IV) Forensic Science: Study of various types of finger prints.
- (V) Estimation of Alkalinity, Hardness, Free CO₂ and Dissolved O₂
- (VI) Microtechnique preparation of permanent slides of planktons, different organs, whole mounts, preparation of Invertebrates and vertebrates.

REFERENCE BOOKS

1. Fundamental of Ecology : By Odum
2. Animal Ecology : By S. P. Singh
3. The early embryology of chick : By B. M. Pattern
4. Embryology : By Arumugam
5. Introductory Cytology : By Veer Bala Rastogi
6. Cell Biology : By De Roberties
7. Cytology, Genetics and Evolution : By P. K. Gupta
8. Cell Biology, Genetics and Evolution : By Arumug
9. Cell and Molecular Biology : By E. O. P. De Roberties
By E. M. F. De Roberties, (Jr.)

List of Reference books

Paper - VI

- | | | | |
|------|-------------------------------------|---|--------------------------|
| (1) | Invertebrates Zoology | - | R. W. Hegner. |
| (2) | A Text book of Invertebrate Zoology | - | S. N. Prasad. |
| (3) | The Invertebrates (only) | - | Boradale & Potts. |
| (4) | Invertebrate | - | E. L. Jordan. |
| (5) | A manual of Zoology vol. I | - | E. Ayyer. |
| (6) | A Text book of Invertebrate Zoology | - | R. C. Kotpal. |
| (7) | Invertebrate Zoology | - | Arumugum. |
| (8) | A Text book of Zoology | - | Arumugum &
Narayanan. |
| (9) | A Text book of Zoology Vol. I | - | Parker & Haswell. |
| (10) | Invertebrate Structure & Function | - | E. J. W. Barington. |

Paper - VII

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|------|--|---|---------------------------|
| (1) | Phylum Cherdata | - | By H. H. Newman. |
| (2) | Vertebrate body | - | Romer. |
| (3) | Biology of the Vertebrates | - | Walter & Sayles. |
| (4) | Zoology of Chordates | - | Nigam. |
| (5) | Outlines of Comparative Anatomy
Verterbrate | - | J. S. Kingsley. |
| (6) | Comparative Vertebrate anatomy | - | Hyman. |
| (7) | Compatative Anatomy of Vertebrates | - | Eaton. |
| (8) | Histology | - | Arthur W. Ham. |
| (9) | Bailey's Text book of Histology | - | Wiffrd M.
Capenchartr. |
| (10) | A Text book of Human Histology | - | Inderbir Singh. |
| (11) | A Text book of Histology | - | A. K. Berry. |
| (12) | Histology | - | R. O. Greep. |

Paper – VIII & (Physiology & Biochemistry)

- | | | | |
|------|--|---|---------------------------------------|
| (1) | A Text book of Biochemistry | - | A. K. Berry. |
| (2) | Fundamentals of Biochemistry | - | Dr. A. C. Deb. |
| (3) | Fundamentals of Biochemistry | - | David T. Plummer. |
| (4) | Biochemistry | - | N. Arumugum &
L. M. Narayanan. |
| (5) | Text book of medical Physiology | - | Guyton. |
| (6) | A Text of Animal Physiology | - | Nagabhushanam. |
| (7) | A Text of Animal Physiology | - | A. K. Berry. |
| (8) | Principles of Biochemistry | - | Lehninger. |
| (9) | A Text book of Physiology & Biochemistry | - | R. A. Agarwal. |
| (10) | Physiology & Biochemistry | - | R. A. Agarwal &
A. K. Shrivastava. |
| (11) | Harper's Review of Biochemistry | - | D. W. Martin, Mayer,
Rudwell. |
| (12) | Comparative animal Physiology | - | Proser & Brown. |
| (13) | Fundamentals of Biochemistry | - | B. P. Pandey. |
| (14) | Hawk's Physiological Chemistry | - | Victor A. Mukusick. |
| (15) | Animal Physiology | - | M. P. Arora. |

Paper – IX

- | | | | |
|-----|---------------------------------|---|--------------------------------------|
| (1) | Concepts of Genetics | - | R. L. Kotpal. |
| (2) | A Text book of Genetics | - | Veer Bala Rastogi. |
| (3) | Genetics | - | P. K. Gupta |
| (4) | Introductory Cytology | - | Veer Bala Rastogi. |
| (5) | Genetics | - | Gardner |
| (6) | Principles of Genetics | - | Sinnott & Dunn. |
| (7) | Theory and Problems of Genetics | - | William D. Stansfield. |
| (8) | Genetics | - | Edgar Altenberg. |
| (9) | A Text book of Genetics | - | H. S. Bhamrah &
C. M. Chaturvedi. |

Embryology

- | | | | |
|-----|------------------------------------|---|------------------|
| (1) | Ecology and Environment | - | P. D. Sharma. |
| (2) | Modern Concepts of Ecology | - | H. D. Kumar. |
| (3) | Fundamentals of Ecology | - | E. P. Odum. |
| (4) | Environmental Biology & Toxicology | - | P. D. Sharma. |
| (5) | Aquatic Pollution & Toxicology | - | R. K. Trivedi. |
| (6) | A Text book of Embryology | - | N. Arumugam. |
| (7) | Early Embryology of the chick | - | B. M. Pattern. |
| (8) | Introduction to Embryology | - | A. K. Berry. |
| (9) | Elements of Ecology | - | George & Clarke. |

Wild Life (I. D. S)

- | | | | |
|------|--|---|-------------------------------|
| (1) | Wild life of India – Conservation and Management | - | K. C. Agrwal. |
| (2) | Wild animals of India | - | Daya Publishing House, Delhi. |
| (3) | Text book of Biotechnology | - | R. C. Dubey. |
| (4) | Modern Concepts of Biotechnology | - | H. D. Kumar. |
| (5) | Threatened Animals of India | - | K. C. Agrawal. |
| (6) | Basic Biotechnology | - | Dr. S. Ignacimuthu. |
| (7) | Indian wild life Sanctuaries & National Parks | - | S. K. Tiwari. |
| (8) | Fishes | - | By M. Chandy. |
| (9) | Fish and Fisheries of India | - | V. S. Jhingrum. |
| (10) | Biotechnology | - | Bull ; Holt & Lilly. |
| (11) | The Essentials of Forensic medicine & Toxicology | - | K. S. Narayan & Reddy. |
| (12) | Toxicology | - | C. A. Fronklin. |
| (13) | Marine Fish-Farming for India | - | James Hornell. |

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.***T. Y. B. Sc. Paper – X (CAN)******(New Course from June - 2008)*****(FISHERIES)**

- (1) Introduction and present status of fisheries in India.
- (2) Environmental impact on fresh water and marine fisheries.
- (3) Fish Processing: Various methods of preservation like deep freezing, cold storage, canning, smoking, salting and sun drying. By-products of fishes.
- (4) Fish Pathology: Study of various diseases caused by bacteria, fungi, protozoans, worms and crustaceans with their preventive measures.
- (5) Natural and cultivative ponds. Pond construction lay out, management and it's productivity.
- (6) Induced breeding methods in fishes. Fish seed collection and transport.
- (7) Coastal and deep sea fishes of India.
- (8) Study of aquarium fishes and its management.
- (9) Crafts and gears used in marine and fresh water fisheries.

REFERENCE BOOKS**Paper - VI**

- | | | | |
|------|-------------------------------------|---|--------------------------|
| (1) | Invertebrates Zoology | - | R. W. Hegner. |
| (2) | A Text book of Invertebrate Zoology | - | S. N. Prasad. |
| (3) | The Invertebrates (only) | - | Boradale & Potts. |
| (4) | Invertebrate Zoology | - | E.L.Jordan&P.S.Verma |
| (5) | A manual of Zoology vol. I | - | E. Ayver. |
| (6) | A Text book of Invertebrate Zoology | - | R. C. Total. |
| (7) | Invertebrate Zoology | - | Arumugam. |
| (8) | A Text book of Zoology | - | Arumugam &
Narayanan. |
| (9) | A Text book of Zoology Vol. I | - | Parker & Haswell. |
| (10) | Invertebrate Structure & Function | - | E. J. W. Barrington. |
| (11) | Invertebrate Zoology | - | Dhami & Dhami |
| (12) | Invertebrate Zoology | - | T.C.Majupuria |

Paper - VII

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|------|--|---|----------------------------|
| (1) | Phylum Chordate | - | By H. H. Newman. |
| (2) | Vertebrate body | - | Romer. |
| (3) | Biology of the Vertebrates | - | Walter & Sayles. |
| (4) | Zoology of Chordates | - | Nigam. |
| (5) | Outlines of Comparative Anatomy
Vertebrates | - | J. S. Kingsley. |
| (6) | Comparative Vertebrate anatomy | - | Hyman. |
| (7) | Comparative Anatomy of Vertebrates | - | Eaton. |
| (8) | Histology | - | Arthur W. Ham. |
| (9) | Bailey's Text book of Histology | - | Winfred M.
Capenchartr. |
| (10) | A Text book of Human Histology | - | Inderbir Singh. |
| (11) | A Text book of Histology | - | A. K. Berry. |
| (12) | Histology | - | R. O. Greep. |
| (13) | Chordate Zoology | - | T.C.Majupuria |

Paper – VIII & (Physiology & Biochemistry)

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|------|--|---|--|
| (1) | A Text book of Biochemistry | - | A. K. Berry. |
| (2) | Fundamentals of Biochemistry | - | Dr. A. C. Deb. |
| (3) | Fundamentals of Biochemistry | - | David T. Plummer. |
| (4) | Biochemistry | - | N. Arumugam &
L. M. Narayanan. |
| (5) | Text book of medical Physiology | - | Guyton. |
| (6) | A Text of Animal Physiology | - | Nagabhusanam. |
| (7) | A Text of Animal Physiology | - | A. K. Berry. |
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| (9) | A Text book of Physiology & Biochemistry | - | R. A. Agarwal. |
| (10) | Physiology & Biochemistry | - | R. A. Agarwal &
A. K. Shrivastava. |
| (11) | Harper's Review of Biochemistry | - | D. W. Martin, Mayer,
Rudwell. |
| (12) | Comparative animal Physiology | - | Proser & Brown. |
| (13) | Fundamentals of Biochemistry | - | B. P. Pandey. |
| (14) | Hawk's Physiological Chemistry | - | Victor A. Mukusick. |
| (15) | Animal Physiology | - | M. P. Arora. |
| (16) | Animal Physiology, ecology&evolutionary
Biology | - | K.Rao, Augustin Chelappa&
Sambasiviah |

Paper – IX & Fisheries (I.D.S.)

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|------|---|---|--------------------------------------|
| (1) | Concepts of Genetics | - | R. L. Kotpal. |
| (2) | A Text book of Genetics | - | Veer Bala Rastogi. |
| (3) | Genetics | - | P. K. Gupta |
| (4) | Introductory Cytology | - | Veer Bala Rastogi. |
| (5) | Genetics | - | Gardner |
| (6) | Principles of Genetics | - | Sinnott & Dunn. |
| (7) | Theory and Problems of Genetics | - | William D. Stansfield. |
| (8) | Genetics | - | Edgar Altenberg. |
| (9) | A Text book of Genetics | - | H. S. Bhamrah &
C. M. Chaturvedi. |
| (10) | Ecology and Environment | - | P. D. Sharma. |
| (11) | Modern Concepts of Ecology | - | H. D. Kumar. |
| (12) | Fundamentals of Ecology | - | E. P. Odum. |
| (13) | Environmental Biology & Toxicology | - | P. D. Sharma. |
| (14) | Aquatic Pollution & Toxicology | - | R. K. Trivedi. |
| (15) | A Text book of Embryology | - | N. Arumugam. |
| (16) | Early Embryology of the chick | - | B. M. Pattern. |
| (17) | Introduction to Embryology | - | A. K. Berry. |
| (18) | Elements of Ecology | - | George & Clarke. |
| (19) | Chordate Zoology | - | M.P.Arora |
| (20) | Wild life of India – Conservation and
Management | - | K. C. Agrwal. |
| (21) | Wild animals of India | - | Daya Publishing
House, Delhi. |
| (22) | Threatened Animals of India | - | K. C. Agrawal. |
| (23) | Indian wild life Sanctuaries &
National Parks | - | S. K. Tiwari. |
| (24) | Fishes | - | By M. Chandy. |
| (25) | Fish and Fisheries of India | - | V. G. Jhingran. |
| (26) | The Essentials of Forensic medicine &
Toxicology | - | K. S. Narayan Reddy. |
| (27) | Fish & Fisheries | - | Khanna |
| (28) | Marine Fish-Farming for India | - | James Hornell. |
| (29) | Fundamental of Ecology | - | Odum E.P. |
| (30) | Animal Ecology | - | S. P. Singh |
| (31) | The early embryology of chick | - | B. M. Pattern |
| (32) | Embryology | - | Arumugam |
| (33) | Introductory Cytology | - | Veer Bala Rastogi |
| (34) | Cell Biology | - | De Roberties |
| (35) | Cytology, Genetics and Evolution | - | P. K. Gupta |
| (36) | Cell Biology, Genetics and Evolution | - | N.Arumugam |
| (37) | Cell and Molecular Biology | - | E. O. P. De Roberties |
| (38) | Chordate Zoology | - | M.P.Arora |