THIRUVALLUVAR UNIVERSITY

BACHELOR OF SCIENCE
B.Sc. ZOOLOGY
DEGREE COURSE

(With effect from 2020 - 2021)

The Course of Study and the Scheme of Examinations

S. No.	Part	Study Components Course Title		Ins. Hrs / week	Credit	Title of the Paper	Maximum Marks		
		SEMESTER I					**CIA**	**Uni. Exam**	**Total**
1	I	Language	Paper-1	6	4	Tamil/Other Languages	25	75	100
2	II	English (CE)	Paper-1	6	4	**Communicative English I**	25	75	100
3	III	Core Theory	Paper-1	6	4	Invertebrata	25	75	100
4	III	Core Practical	Practical-1	4	0	Invertebrata and chordata	0	0	0
5	III	Allied -1	Paper-1	4	3	(To choose 1 out of 3) 1. Chemistry – I 2. Botany – I 3. Economic Entomology – I	25	75	100
6	III	Allied- 1	Practical-1	2	0		0	0	0
7	**III**	**PE**	**Paper 1**	**6**	**3**	**Professional English I**	**25**	**75**	**100**
8	IV	Environmental Studies		2	2	Environmental studies	25	75	100
		Sem. Total		**36**	**20**		**150**	**450**	**600**
		SEMESTER II					**CIA**	**Uni. Exam**	**Total**
8	I	Language	Paper-2	6	4	Tamil/Other Languages	25	75	100
9	II	English (CE)	Paper-2	6	4	**Communicative English II**	25	75	100
10	III	Core Theory	Paper-2	5	4	Chordata	25	75	100
11	III	Core Practical	Practical-1	3	2	Invertebrata and chordata	25	75	100
12	III	Allied-1	Paper-2	4	3	(To choose 1 out of 3) 1. Chemistry II 2. Botany II 3. Economic Entomology II	25	75	100
13	III	Allied Practical - 1	Practical-1	2	2		25	75	100
14	**III**	**PE**	**Paper 1**	**6**	**3**	**Professional English II**	25	75	100
15	IV	Value Education		2	2		25	75	100
16	IV	Soft Skill		2	1		25	75	100
		Sem. Total		**36**	**25**		**225**	**675**	**900**

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SEMESTER I
CORE PAPER - 1
INVERTEBRATA

Objectives:

To acquire wide knowledge about different kinds of animal species especially invertebrates.
To understand the systematic and functional morphology of various groups of invertebrates.
To study their economic importance, affinities and adaptations.

UNIT – I

Principles of Taxonomy – Binomial nomenclature-rules of nomenclature – classification of the animal kingdom. **PROTOZOA**: General characters and classification up to classes with examples. **Type study- paramecium,** parasitic protozoans [Entamoeba, Trypanosoma and plasmodium]

UNIT – II

PORIFERA: General characters and classification up to classes with examples. **Type study - sycon,** spicules and canal system in sponges.
COELENTERATA: General characters and classification up to classes with examples.
Type study – **Obelia,** polymorphism in coelenterates – corals and coral reefs.

UNIT – III

HELMINTHES: General characters and classification up to classes with examples.
Type study – **Taenia solium.** helminthes parasites (Wuchereria bancrofti, Ascaris and Faciola).
ANNELIDA: General characters and classification up to classes with examples.
Type study: **Nereis,** metamerism in Annelids, parasitic adaptations of Leech.

UNIT – IV

ARTHROPODA: General characters and classification up to classes with examples.
Type study – **Prawn,** Peripatus and its affinities, Mouth parts of insects.

UNIT – V

MOLLUSCA: General characters and classification up to classes with examples.
Type study – **Fresh water Mussel,** Economic importance of mollusca.
ECHINODERMATA: General characters and classification up to classes with examples.
Type Study- Sea star, Echinoderm larvae and their significance.

Reference Books:

Ekambaranatha Ayyar.M. and T.N. Ananthakrishnan, 1992. Manual of Zoology Vol.1 [Invertebrata],
Viswanathan [Printers and Publishers] Pvt. Ltd.; Madras.

Jordan, E.L. and P.S.Verma, 1993. Invertebrate Zoology, 12th Edition. S.Chand and Co.Ltd., NewDelhi.
Kotpal, R.L. 1988-1992 Protozoa, Porifera, Coelenterata, Helminthes, Annelida, Arthropoda,Mollusca, Echinodermata. Rastogi Publications, Meerut.
Parker and Haswell, 1964. Test Book of Zoology. Vol.1 [Invertebrata]. A.Z.T; B.S.Publishers and distributors, New Delhi.
L.A Borradile and F.A.Pott. The Invertebrates. Cambridge University Press. UK.
Adam Sedgwick. 1972 A student text book of Zoology. Vol.I and II. Central book Depot. Allahabad.
P.S.Dhami and J.K.Dhami. Invertebrate Zoology, S.Chand and Co. New Delhi.
Hyman L.H. The Invertebrate Vol.I-IV. 1955, McGraw Hill Co. New York.
Barrington, E.J.W. 1969. Invertebrate structure and function. ELBS Publication.
Barnes. Invertebrate Zoology. Toppan International Co.

Course Outcome

- To understand the principle of taxonomy
- To learn the general characters, classification of Invertebrates and their phylum
- To understand the morphology and their systems of various groups of Invertebrates.
- To study the economic importance of invertebrates
- To study the affinities and adaptations of Invertebrates

ALLIED - 1
PAPER - 1

1. CHEMISTRY I

OBJECTIVE:

- Basic knowledge on Metallurgy, Cycloalkanes, Polarising Effects, Stereochemistry, Chemical Kinetics, Catalysis, Photochemistry, VSEPR Theory, Fuels, Osmosis, Nuclear Chemistry, Petroleum Chemistry, Chemistry of Naphthalene, Conductors and Applications wherever necessary are to be taught for I- Semester.

UNIT – I

1.1General Metallurgy - Extraction of Metals - Minerals and Ores- Difference between Minerals and Ores – Minerals of Iron, Aluminum and Copper - Ore Dressing or Concentration of Ores - Types of Ore Dressing- Froth Floatation process, Gravity separation and Magnetic separation.

1.2 Calcination, Smelting, Roasting, Fux, Slag - Definition - Reduction methods - Goldschmidt Aluminothermic process and Carbon Reduction method - Refining of Metals - Electrolytic, Van Arkel and Zone Refining.

1.3 Ores of Titanium and Cobalt - Extraction of Titanium and Cobalt.

UNIT – II

1. Cycloalkanes - Preparation – Wurtz reaction and Dieckmann's condensation - Properties of Cycloalkanes – Substitution and Ring opening reactions.

2.2 Polarisation - Inductive effect, Mesomeric effect and Steric effect (Acid and Base Strength).

2.3Stereoisomerism – Types - Cause of Optical Activity – Enantiomers - Diastereomers - Meso form - Optical Activity of Lactic acid and Tartaric acid - Racemisation and Resolution – Definition and Methods - Geometrical isomerism – Definition and example - Maleic and Fumaric acid – Differences.

UNIT – III

3.1 Chemical Kinetics – Rate of a reaction – Definition of Order and Molecularity – Distinction between Order and Molecularity - Derivation of First order rate equation - Half Life Period of first order reaction.

3.2 Catalysis - Catalyst - Autocatalyst - Enzyme catalyst - Promoters - Catalytic poisons –

Active Centre - Differences between Homogeneous and Heterogeneous Catalysis - Industrial Applications of Catalysts.

3.3 Photochemistry – Grothus-Draper's law – Stark-Einstein's law - Quantum yield – Photosynthesis - Phosphorescence – Fluorescence.

UNIT – IV

4.1 VSEPR Theory – Hybridisation and Shapes of simple molecules BF_3, PCl_5, SF_6 and XeF_6.

4.2 Fuels – Classification of Fuels - Calorific value of Fuels – Water gas, Carbureted Water gas and Producer gas – Composition and Uses - Non-Conventional fuels - Need of Solar Energy - Applications - Biofuels – Oil gas, Natural gas and LPG – Uses.
4.3 Osmosis - Osmotic pressure - Reverse osmosis – Definition - Desalination of Sea water.

UNIT – V

5.1Nuclear Chemistry – Atomic number, Mass number - Isotopes, Isobars and Isotones – Definition and Examples - Definition of Half life period - Nuclear Binding Energy, Mass Defect and N/P ratio - Nuclear Fission and Nuclear Fusion (Elementary idea) - Applications of Radioisotopes in Medicine, Agriculture and Industries – Carbon Dating.

5.2 Crude Oil - Petroleum - Petroleum Refining - Cracking - Applications of Cracking –
Naphthalene – Preparation – Haworth's method – Properties – Oxidation, Reduction and Uses of Naphthalene - Structure of Naphthalene (Structural elucidation not necessary).

5.3 Conductors, Insulators, Semiconductors, N- and P- Type Semiconductors – Definitions and Examples.

ALLIED - 1
PAPER - 1

2. BOTANY - I

UNIT-I: Cell Biology
Prokaryotic and Eukaryotic cell (plant cell)
Cell organells - Chloroplast, Mitochondrion and Nucleus.
Cell division – Mitosis.

UNIT-II: Anatomy
Tissues - Meristematic and permanent tissues. Primary and Normal Secondary thickening of Dicot stem.

UNIT-III: Bacteria and Viruses
Bacteria - General characters - shape - flagellation - Structure of E. Coil - reproduction - (Vegetative
and asexual), Economic importance. Structure of Tobaco Mosaic Virus, Bacteriophage.

UNIT-IV: Structure and Life History of
a) Chlorella and Gracilaria
b) Albugo, Penicilium and Agaricus

UNIT-V: Structure and Life History of
a) Funaria
b) Lycopodium
c) Cycas
Economic importance of Chlorella, Penicillium and Agaricus.

ALLIED - 1
PAPER - 1
3. ECONOMIC ENTOMOLOGY – I

Objectives:
To enable learners to categorize insects on the basis of morphological characteristics
To study the general anatomy and physiology of specific useful and harmful insects.
To study the different life processes of harmful insects
To study the versatile roles of insects in agriculture
To study the economic importance of insects as vectors, pollinators, predators & parasites.

Outcomes:
Learner would understand basis of classification.
Learner would be able to understand the difference in the life cycles of insects
Learner would understand life processes of certain harmful insects
Learner would understand the various ecological importance of insectsLearner would understand need for conservation of insects

UNIT – I

Classification of insects [Major orders]
Biology of Butterfly

UNIT – II

Beneficial insects. Mode of life, economic importance and development of Honey bee
Silk worm (Bombyx Mori) - Silk worm [Bombyx mori] rearing Equipment required
Rearing procedure for harvesting of cocoons.

UNIT – III

Harmful insects
An account of any three pests of :
1. Rice 2. Cotton 3. Coconut

UNIT – IV

Principles and method of pest control – conventional, Physical, Mechanical, Chemical and Biological control

UNIT – V

Vector borne diseases. A brief account of insect vectors affecting the health of man and domestic animals.

Reference Books:

B. Vasantharaj David and T. Kumaraswami 1982. Elements of Economic Entomology, Popular book Depot, Chennai.
Nayar, K.K., Ananthakrishnan, T.N. and B.V. David, V 1992 General and Applied Entomology Tata McGraw, New Delhi.
P.G. Fenemore Manual. Silkworm Rearing. FAO Agricultural Service Bulletin, Rome.

SEMESTER II

CORE PAPER 2

CHORDATA

OBJECTIVES:

1. To understand the systemic and functional morphology of various groups of chordates.
2. To study their affinities and adaptations to different modes of life.

UNIT-I

1. Salient Features, General classification of Phylum Chordata upto orders.
2. Origin of Chordata.
3. Prochordata: General Characters and affinities of Hemichordata, Cephalochordata & Urochordata

UNIT-II

PISCES

1. General characters and classification up to orders.
2. Type study : Shark.
3. Parental care.

AMPHIBIA

1. General characters and classification up to orders.
2. Type study : frog
3. Adaptive features of Anura, urodela & Apoda.
4. Parental care in Amphibia

UNIT-III

REPTILIA

1. General characters and classification up to order level.
2. Type study-Calotes.
3. Poison apparatus and biting mechanism of poisonous snakes.
4. Identification of poisonous and non-poisonous snakes.

AVES

1. General characters and classification upto orders
2. Type study-Pigeon
3. Characters of Archaeopteryx.
4. Ratitae.
5. Flight adaptation.

UNIT-V

MAMMALIA

1. General characters and classification upto orders.
2. Type study-Rabbit.

3. Flying Mammals.
4. Dentition in mammals.
5. Aquatic mammals.

Text Books:

1. Ekambarantha Ayyar, M and T.N Ananthakrishnan 1992, A manual of Zoology Vol. II[Chordata]. S. Viswanaathan (Printers and Publishers] Pvt. Ltd., Madras.
2. Jordan E.L. and P.S. Verma 1995. Chordata Zoology and elements of Animal Physiology. S. Chand and Co., New Delhi.

Reference Books :

1. Kotpal R.L. 1992. Vertebrata, Rastogi Publications, Meerut
2. Nigam.H.C. 1983 Zoology of chordates, Vishal publications, Jalandhar.
3. Waterman, Allyn J.et al.1971, Chordate Structure and functions. Mac.Millan and Co., New York.
4. Jollie. M. 1968. Chordate Morphology. East west press Pvt. Ltd., New Delhi.
5. Hyman. L.H. Comparative vertebrate Zoology. McGraw Hill Co., New York.
B.Sc. Zoology: Syllabus (CBCS) 11

Course Outcome

On completion of the unit the students will able to describe the salient features of phylum Chordata
After completion of this unit the students will able to
Observe the diversity in class pisces and their classification
It provides the way of identifying different orders of Amphibians.
Students will able to list out the unique characters of Aves.
To know the classification of class Mammalia up to orders.

CORE PRACTICAL I
INVERTEBRATA AND CHORDATA

DISSECTIONS

Cockroach – Digestive and Nervous system, **Prawn** – Nervous system, **Fish** (any one) – Digestive and Arterial system

MINOR PARCTICAL

MOUNTING -**Insect Mouth parts :** Cockroach, Honey bee, House Fly and Mosquito

Prawn – Appendages, **Shark** - Placoid scales, **Earthworm** – Body setae

SPOTTERS

Study of the following specimens

1.Classify by giving reasons

Paramecium,Sycon, Obelia, Taenia solium, Neries, Prawn, Freshwater mussel, Seastar Amphioxus, Shark, Hyla, Rhacophorus, Calotes, Pigeon, Rat/Rabbit.

2.Adaptations to their respective modes of life

Entamoeba, Trypanosoma, Plasmodium, Corals [any 2], Ascaris, Fasiola, Wuchereria bancrofti, Cheatopterus, Leech, Limulus, Nauplius, Mysis, Zoea, Balanoglossus, Ascidian, Ichthyophis, Draco, sea snake and Bat.

3.Biological significance:

Paramecium conjugation and binary fission, physalia, Trochophore Larva, Peripatus, Sacculina On Crab, Sea Anemone on Hermit Crab, Pearl Oyster, Bipinnaria Larva, Anabas, Hippocampus, Narcine, Echeneis, Arius, Exocoetus, Eel, Amblystoma, Axolotl Larva, Bufo, Cobra, Krait, Russels Viper, Echis Carinata, Turtle, Parrot, Woodpecker, King Fisher and Ant eater

4. Relate structure and function:

Sponge Spicules, Obelia Polyp, Taenia Scolex, Nereis - Parapodium, Book lungs of scorpion/Honey bee sting apparatus, Pedicellaria of Sea star, Ctenoid Scale and Quill Feather of pigeon.

5.Draw labeled sketches:

T.S. of Nereis, T.S. of Leech, Obelia medusa, T.S. of Amphioxus through Pharynx, T.S. through arm of Sea star.

6.Osteology

Skeleton - Pectoral girdles of Frog and Pigeon.,Pelvic Girdles of Frog and Pigeon.

Fore and Hind limbs of Frog and Pigeon., Synsacrum of Pigeon. **Dentition -** Dog, Rabbit and Man

Reference Books:

Verma. P.S. 2011 A Manual of Practical Zoology INVERTEBRATES Chand & Co, Ltd, Ram Nagar -New Delhi.

Verma. P.S. 2011 A Manual of Practical Zoology CHORDATES, Chand & co, Ltd. Ram Nagar – New Delhi.

Jayanpa Sinha . 2010 Advanced Practical Zoology, Books & Allied (p) Ltd. No.1. Subham Plaza IFloor, Calcutta.

ALLIED - 1
PAPER - 2

CHEMISTRY II

OBJECTIVE:

- Basic knowledge on Coordination Chemistry, Industrial Chemistry, Carbohydrates, Aminoacids, Proteins, Electrochemistry, Paints and Pigments, dyes, Vitamins, Medicinal Chemistry, Corrosion and Applications wherever necessary are to be taught for II- semester.

UNIT – I

1.1 Coordination Chemistry - Nomenclature of Coordination Compounds - Ligands, Central Metal Ion and Complex Ion – Definition and Examples – Coordination Number - Werner's Theory of Coordination Compounds - Chelates - Functions and Structure of Haemoglobin and Chlorophyll.

1.2 Industrial Chemistry - Fertilisers and Manures – Biofertilisers - Organic Manures and their importance - Role of NPK in plants - Preparation and Uses of Urea, Ammonium Nitrate, Potassium Nitrite and Super Phosphate of Lime.

1.3 Contents in Match Sticks and Match Box - Industrial making of Safety Matches – Preparation and Uses of Chloroform, DDT, Gammexane and Freons.

UNIT – II

2.1 Carbohydrates - Definition and Examples - Classification – Oxidation and Reduction Reactions of Glucose - Structure of Glucose (Structural elucidation not necessary) - Uses of Starch - Uses of Cellulose Nitrate and Cellulose Acetate.

2.2 Amino Acids – Definition and Examples - Classification of Amino Acids - Preparation - Gabriel Phthalimide Synthesis – Properties – zwitterion and Isoelectric point - Structure of Glycine.

2.3 Proteins – Definition - Classification of Proteins based on Physical properties and Biologcal functions - Primary and Secondary Structure of Proteins (Elementary Treatment only) – Composition of RNA and DNA and their Biological role - Tanning of Leather - Alum (Aluminum chloride tanning) - Vegetable tanning – Chrome Tanning.

UNIT – III

3.1 Electrochemistry - Electrolytes – Definition and Examples – Classification - Specific and Equivalent Conductance - their determination – Variation of Specific and Equivalent conductance with Dilution – Ostwald's Dilution Law and its Limitations.

3.2 Kohlrausch's Law - Determination of Dissociation Constant of weak Electrolytes using Conductance measurement - Conductometric titrations.

3.3 pH – Definition and pH determination by indicator method - Buffer solutions - Buffer action - Importance of buffers in the living systems.

UNIT – IV

4.1Paints - Components of Paint – Requisites of a Good Paint - Pigments – Classification of Pigments on the basis of Colour – Examples - Dyes – Definition – Chromophores and Auxochromes – Examples - Colour and Dyes - Classification based on Constitution and Application – Examples.

4.2 Vitamins – Definition – Classification – Water Soluble and Fat Soluble – Occurrence - Biological Activities and Deficiency Diseases caused by Vitamin A, B, C, D, E and K - Hormones – Definition and Examples – Biological Functions of Insulin and Adrenaline.

4.3 Chromatography - Principles and Applications of Column and Paper chromatography- R_f value.

UNIT – V

5.1 Drugs - Sulpha Drugs – Preparation and Uses of Sulphapyridine and Sulphadiazine - Mode of Action of Sulpha Drugs - Antibiotics - Uses of Penicillin, Chloramphenicol and Streptomycin - Drug Abuse and Their Implication - Alcohol – LSD.

5.2 Anaesthetics - General and Local Anaesthetics - Antiseptics - Examples and their Applications - Definition and One Example each for Analgesics, Antipyretics, Tranquilizers, Sedatives - Causes, Symptoms and Treatment of Diabetes, Cancer and AIDS.

5.3 Electrochemical Corrosion and its Prevention – Electroplating – Applications.

ALLIED PRACTICAL

CHEMISTRY

VOLUMETRIC ANALYSIS

1. Estimation of HCl – Standard sulphuric acid.
2. Estimation of Borax - Standard Sodium Carbonate.
3. Estimation of NaOH – Standard Oxalic Acid.
4. Estimation of $FeSO_4$ – Standard FAS.
5. Estimation of Oxalic acid – Standard $FeSO_4$.
6. Estimation of FAS – Standard Oxalic Acid.
7. Estimation of Oxalic acid – Standard Oxalic Acid.
8. Estimation of Fe^{2+} using Diphenylamine / N- Phenyl Anthranilic acid as indicator.

ORGANIC ANALYSIS

Systematic Analysis of Organic Compounds containing One Functional Group and Characterisation by Confirmatory Tests.

Reactions of Aromatic Aldehyde, Carbohydrates, Mono and Dicarboxylic acids,
Phenol, Aromatic Primary Amine, Amide and Diamide.

REFERENCE BOOKS

- Inorganic Chemistry - P. L. Soni - Sultan Chand (2006).
- Inorganic Chemistry - B. R.. Puri, L. R. Sharma and K. C. Kallia – Milestone Publications (2013).
- Selected Topics in Inorganic Chemistry - W. U. Malik, G. D. Tuli and R. D. Madan - S. Chand Publications (2008).
- Text Book of Inorganic Chemistry – R. Gopalan, Universities Press – 2012.
- Text Book of Organic Chemistry - P. L. Soni - Sultan Chand & Sons - 2007.
- Advanced Organic Chemistry - Bahl and Arun Bahl - Sultan Chand and Co. Ltd – 2012.
- Organic Reaction Mechanisms - Gurdeep Chatwal- Himalaya Publishing House.
- A Text Book of Organic Chemistry K. S. Tewari, N. K. Vishol, S. N. Mehrotra-Vikas Publishing House – 2011.
- Principles of Physical Chemistry - B. R. Puri, Sharma and Madan S. Pathania, Vishal Publishing Company – 2013.
- Text Book of Physical Chemistry - P. L. Soni, O. P. Dharmarha andU. N. Dash - Sultan Chand & Co – 2006.
- Understanding Chemistry – C. N. R. Rao, Universities Press – 2011.

ALLIED - I
Paper 2
BOTANY – II

UNIT-I: Taxonomy

General outline of Bentham and Hooker's system of classification. Study of the range of characters and economic importance of the following families: Annonaceae, cucurbitaceae, Apocynaceae, Euphorbiaceae and Liliaceae.

UNIT-II: Embryology

Structure of mature anther. Structure of mature ovule and its types. Fertilization.

UNIT-III: Plant Physiology & Plant Tissue Culture

Physiological role of micro and macro elements their deficiency symptoms Photosynthesis - lightreaction - Calvin cycle Respiration - Glycolysis - Kreb's cycle - electron transport system. Growth hormones – Auxins. Tissue culture and its principles.

UNIT-IV: Ecology

Ecosystem - fresh water ecosystem. Environmental pollution. Major pollutants - types of pollution - Air pollution, water pollution, soil pollution - control measures.

UNIT-V: Genetics & Evolution

Mendelism - Monohybrid and dihybrid crosses. Theories of evolution - Lamarckism, Darwinism.

ALLIED PRACTICAL
BOTANY – I & II

Description of plants in technical terms belonging to the families mentioned in the theory part.
To study the internal structure of Anatomy material, Pteridophytes and Gymnosperms.
Identification and Description of Micro Preparation materials mentioned in the theory part.
Description of experimental setup of plant physiology.

BOOKS SUGGESTED

Ashok Bendre, A.K. and Pandey P.C. (1975) Introductory Botany. Rastogi Publication Meerut.

Ganguly, A.K. and Kumar. N.C. (1971) General Botany Vol. I & Vol. II, Emkay Publication, Delhi.
Rev. Fr. Ignacimuthu, S.J. (1975) Basic Biotechnology – Tata Mcraw till publication co., New Delhi.
Rao, K.N. Krishnamoorthy, K.V. and Rao. G. (1975) Ancillary Botany. S. Viswanathan Private. Ltd., Chennai.

ALLIED – 1
Paper 2
3. ECONOMIC ENTOMOLOGY – II

Objectives:

To study the basic concepts of pesticides and integrated pest control

Outcomes

To understand the economic, ecological, and sociological benefits of IPM.
To Distinguish positive and negative impacts of pesticide use.
To Understand problems resulting from misuse, overuse, and abuse of chemical pesticides.
To Define and describe pesticide resistance and how it develops.
To Identify ecological and biological characteristics important in development of pest populations.

UNIT – I

Insects and their interrelations with environments, insects as Pollinators parasitoids, Scavengers and weed killers.

UNIT – II

Classification of insecticides – based on mode of action, contact, systemic, fumigants, nerve and stomach poison. Biological control. Integrated pest control.

UNIT – III

Basic principles of insecticide formulation and their application in pest control – plant protection appliances used – working and application.

UNIT – IV

Precautions in handling of pesticides. Pesticides and environmental pollution.

UNIT – V

Assessment to pest population, Estimation of pest damage – pest outbreak – pest surveillance.

Reference Books:

B. Vasantharaj David and T. Kumaraswami 1988. Elements of Economic Entomology. Popular book Depot, Chennai.

Nayar, K.K., AnanthaKrishnan, T.N. and B.V. David 1992 General and applied Entomology Tata McGraw, New Delhi.
P.G. Fenemore, Alka Prakash 1997 Allied Entomology, Wiley Eastern Ltd. New York.
Wigglesworth J.B., 1994. Insect physiology, Chapman and Hall, London.
Temphare D.B., 1984. A Text Book of Insect Morphology, physiology and Endocrinology. S. chand and co., New Delhi.

ALLIED PRACTICAL

ECONOMIC ENTOMOLOGY – I & II

I. MAJOR PRACTICAL

Model / chart – Draw and comment
Life cycle of Holometabolous, Hemimetabolous and Ametbolous Insects [Atleast one example in each]
Insect formulations and plant protection appliances.

II. MINOR PRACTICAL

Mounting
Mouth parts – Bed Bug, Mosquito and House fly
Sting apparatus of Honeybee.

III. SPOTTERS

Pests of agricultural Importance – citrus Butterfly, Rhinocerous beetle, Stem borer – Rice, Sugar cane, maize, Cotton, Fruit borer, Root borer, six spotted beetle, grasshopper, Crickets, Pod Borer [pulses], Rice weevil, Mango nut weevil. Pest of Medical Importance – Mosquito, Housefly, cockroach, Ticks, Mites, Louse, Bed Bug, Plasmodium, Filarial Worm, Loa Loa, Dust mite.

IV. RECORD

Collection and preservation of insects – insect store box
Note: The Students may be asked to submit a minimum of 10 whole mounts of the insects.

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