

ADIKAVI NANNAYA UNIVERSITY :: RAJAHMUNDRY

Department of Zoology

Pre-PhD Course work syllabus

Paper-II: Fish Diversity Studies and Research Ethics

Research Guide: Dr. K. Ramaneswari, Dept. of Zoology Adikavi Nannaya University

(**Research Scholar** Mrs. S. Sarada; Regd No. 20204003)

UNIT-I

Biosystematics- Definition and basic concepts. Importance and applications of biosystematics. Procedures in taxonomy - Taxonomic collections. taxonomic keys.

Types of taxonomy- Conventional types, Cytotaxonomy. Chemotaxonomy and Molecular taxonomy. Concept of Zoological Nomenclature.

UNIT-II

General characters and classification of fishes. Methods of Fish Identification. Systematics and Evolution in fishes

UNIT-III


Habitat and Ecological Niche. Lentic and Lotic waters; Physico-chemical characteristics of freshwater; Lacustrine biocoenosis; Ecological classification of freshwater biota; Productivity- Concepts of productivity, Biological and Organic productivity;. Stream fish ecology. Lake and Reservoir Fish ecology. Freshwater fish diversity.

UNIT-IV

Soil parameters: Soil texture. Soil reaction (pH), Organic carbon content, Carbon to Nitrogen ratio (C:N) and General nutrient status. Water quality parameters: Temperature, Dissolved Oxygen (DO), salinity, pH, Turbidity, Total alkalinity, CO₂, Ammonia, Nitrite, H₂S Biogeochemical cycles. Ecological Indices

UNIT-V

Research Ethics and plagiarism: Rules and guidelines for research publications. Code of Research Ethics. Authorship guidelines. Plagiarism policies of UGC and its software information. Information on UGC Care journals list


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ADIKAVI NANNAYA UNIVERSITY

RAJAHMUNDRY

Pre-Phd. Examination Syllabus-2022

Paper-II: Fish Systematics and Diversity Studies

Time: 3hr

Marks: 100

All Questions carry equal marks

1a. Define Biosystematics. Explain its importance and applications.

Or

b. What are the different types of Taxonomy. Discuss.

2a. Give an account of the Evolution of fishes.

Or

b. Explain the methods involved in fish identification.

3a. Distinguish between Habitat and Ecological Niche.

Or

b. Explain the classification of fresh water biota with examples. Add a note on fish diversity

4a. Give an account of the methods for soil analysis.

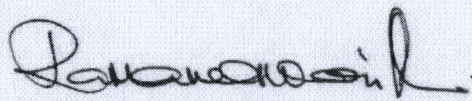
Or

b. What is Organic Productivity? Explain.

5a. Explain the Hydrologic cycle. Add a note on its importance

Or

b. Discuss about the importance of Dissolved oxygen in aquatic ecosystems



Research Supervisor
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ADIKAVI NANNAYA UNIVERSITY, RAJAHMUNDRY
SCHOOL OF LIFE AND HEALTH SCIENCES
 Pre Ph.D Examination Syllabus-2022
T. Venkateswara Rao Regd No 20204006

Paper - I: Recent Advances in Life Science & Research Methodology

UNIT-I:

Basic and applied research, Literature survey and collection, Identification of the problem, Setting up of objectives, Experimental design, standardization of protocols, Annual report preparation, Thesis writing, Research paper and Review article writing, Report writing, Research ethics and plagiarism

UNIT-II:

Biochemical techniques: Extraction, isolation, purification, Identification and characterization of Proteins, Quantification of carbohydrates, Extraction of lipids, Enzyme kinetics – Enzymes assay, activity, turn over, yield, Measurement of pH, Use of Indicators, Sterilization techniques, Media Preparation, Centrifugation techniques - Principle and applications of Centrifugation.

UNIT-III:

Microscopy – Principle, types, and applications of Microscopy, Chromatography – Principle, types, and applications of Chromatography Spectrophotometry – Principles and applications of Visible, UV spectrophotometry, IR, NMR, AAS Electrophoresis – Principle, types and applications of electrophoretic techniques Isotopes – Scintillation counter, Gamma ray counter, Radioactive decay, Measurement and Units of radioactivity, safety measurements, Disposal of radioactive wastes.

UNIT-IV:


Biostatistics – Sampling methods, Sample collection, Mean, Median, Mode, Tabulation of data, Graphical representation of data, correlation, regression, Chi-square test, Student t-test, Test of significance, ANOVA Software used in Biostatics.

UNIT-V:

Computational Biology-Microsoft office-word, excel and power point presentation, Graphical representation of data using EXCEL and sigma plot, Bioinformatics –BLAST, Protein data base, Intellectual property rights (IPR), property rights (IPP) and Patenting.

Texts and References:

1. Research methodology of biological science – by N. Gururani
2. Fundamentals of Biostatistics – by Khan & Khanum
3. Biophysical chemistry: principles and techniques – by Upadhyay
4. An Introduction to Practical Biochemistry by Keith Wilson and John Walker
5. Molecular Cloning: A laboratory Manual by Joseph Sambrook and David W. Russell Published by Cold Spring Harbor Laboratories Press


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**PITHAPUR RAJA'S GOVERNMENT COLLEGE (A): KAKINADA
DEPARTEMENT OF ZOOLOGY
PAPER II
PRE-Ph.D. Examinations -2022**

Research Scholar : SI no 8 Admn. No. 20204006
Venkateswara Rao Tatapudi

Research Supervisor: Dr. N. SREENIVAS
P R Government College (A), Kakinada

*** BIO RESOURCES OF KAKINADA COAST ***
SYLLABUS

I. PHYSICO-CHEMICAL PARAMETERS:

Water quality analysis in the study area for
pH, DO, BOD, Turbidity, TDS, Alkalinity, Hardness

II. ZOOPLANKTON

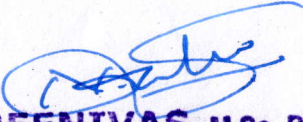
Marine environment, Zooplankton- Phytoplankton relations ships,
Zooplankton Adaptations, Collection of Zooplankton, Various types of Nets, Biomass
determination, Counting methods.

III. BENTHOS

Collection methods of Micro Benthos- Core- Grab, Macrobenthos
quantification methods, Role of macrobenthos in Costal Ecosystem.

IV. BIOCHEMICAL COMPOSITION

Qualitative methods for estimation of Carbohydrates, Protein, Fat, in
biological samples


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MODEL QUESTION PAPER

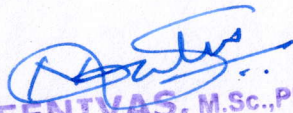
Paper II

Research Scholar: T. Venkateswara Rao

MODEL QUESTION PAPER

Answer ANY FOUR of the following Questions 4 X 25=100 Marks

1. In detail explain the process of sample collection, measurement of Dissolved Oxygen by Winkler's method with the preparation of reagents.
2. Correlate the relationship of DO BOD and explain the significance.
3. Describe the methodology of Zooplankton sample collection
4. Explain in detail the phytoplankton Zooplankton relations ships in marine ecosystem
5. Describe the methodology adopted for the collection of Micro benthos
6. Explain the role of Micro benthos in the coastal ecosystem
7. Explain the role played by the carbohydrates as major food stuff. How do you estimate the composition of carbohydrate in any biological sample?
8. Explain the role played by the Fats as major reserve food stuff. How do you estimate the composition of fats in any biological sample?


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