

**PAPER - I**

**ECOLOGY AND BIOLOGY FISHES**

**UNIT - I:**

- 1. Introduction to Fishery Science. 15**
- 1.1. Introduction, definition Scope and importance of fish.
  - 1.2. Classification of fisheries.
  - 1.3. History of fisheries.
  - 1.4. Prospects and perspectives of fisheries in India.
  - 1.5. Present status of fisheries in India

**UNIT - II:**

- 2. Ecology of Water Bodies. 20**
- 2.1 Ecology of lentic and lotic eco systems - Reservoirs, Ponds, Rivers and Estuaries.
  - 2.2 Ecosystem energetics and productivity - Energy flow, Trophic levels, Pyramids, biogeochemical cycles, eutrophication.
  - 2.3 Physico - Chemical characters of water and soil of freshwater and brackishwater systems.
  - 2.4 Population dynamics - Population characteristics. Dynamics of fish populations. Significance of plankton in aquaculture.
  - 2.5 Aquatic pollution and its effect on fisheries.

**UNIT - III:**

- 3. Biology of Fishes - I. 25**
- 3.1.1 Exo- and endoskeletal systems - Body form, fins and locomotion, skin, scales, endoskeletal Systems.
  - 3.2 Digestive, Respiratory, Swim bladder, Circulatory systems.
  - 3.3 Nervous and Scensory systems.
  - 3.4 Endocrine, excretory systems, Osmoregulation and Reproductive System and Development.
  - 3.5 Specialised organs - Electric organs, Sound producing organs, Bioluminescence and poison glands.

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UNIT - IV:

4. **Biology of Fishes - II**

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- 4.1 Sex determination, Courtship and Parental care.
- 4.2 Fecundity, GSI, Sex ratio and Condition factor.
- 4.3 Spawning and its Periodicity.
- 4.4 Feeding biology.
- 4.5 Growth - Age determination, growth, morphometry and Meristic characters.

PRACTICALS:

1. Water analysis, Temperature  $P$ , Dissolved Oxygen, Total alkalinity, Calcium, Magnesium, Chlorides, Nitrates and Phosphates.
2. Dissections of Fish - digestive tract, cranial nerves, reproductive organs, brain.
3. Identification of Scales - Placoid, Ctenoid and Cycloid.
4. Identification of Histological slides - Skin, Stomach, intestine, gills, kidney, ovary, testis.
5. Identification of endoskeletal structures - Skull, vertebrae.
6. Estimation of fecundity
7. Estimation of GSI.
8. Age determination of fish with scale method.
9. Identification of fish with the help of morphometry and meristic character - Rohu, Catla, Common Carp, Striated murrel, Marul, Singhi, Mulletts, Milk fish.
10. Identification of different adaptation in fishes - Rohu, Striated murrel, Marul, Notopterus, Glossogobius, Mastacembelus, Gold fish.

P.T.O.