

13 Closed culture systems: pen culture, cage culture, culture in recirculating waters.

14 Hatching, different types of hatcheries in India.

UNIT-IV

15 Composite fish culture.

16 Food of culture fishes, food micronutrients, supplementary feeding and feed formulation.

17 Live fish transport.

18 Integration of fish culture with agriculture and animal husbandry, Pokkali fields, Bhasabhada fisheries.

19 Fishing crafts and gears of India.

UNIT-V

20 Introduction to eco-toxicology: classification of toxicants

21 Toxic agents and their mode of action-pesticides, heavy metals, radiation, carcinogens and organic derivatives.

22 Genotoxicology.

23 Acute and chronic toxicity, applications of toxicology.

24 (a) water pollutants : their types and effects on fishes and other aquatic organisms

(b) control of water pollution.

(c) fluoride toxicity

M.SC. (FINAL) ZOOLOGY - 2006-07

PAPER-IV

ELECTIVE PAPER GROUP-II

(Organismic Biology stream)

LIMNOLOGY AND ICHTHYOLOGY

Duration : 3 hours

M.M.100 Marks

UNIT-I

1. Definition, general accounts and benefits of lakes:
2. Origin of lakes.
3. Classification of lakes
4. Physics of lake water with particular reference to:
 - (a) Temperature - thermal stratification, heat budget.
 - (b) Light
 - (c) Turbidity
 - (d) Density

UNIT-II

- 5 Chemistry of lake water with particular reference to
 - (a) pH
 - (b) Dissolved gases
 - (c) Nitrates and Nitrogen cycle

- (d) Phosphates and Phosphorus cycle
- (e) BOD & COD
- 6 Composition, distribution and limnological significance of plankton
- 7 Composition, distribution and limnological significance of benthos.
- 8 Biological productivity and energy flow.
- 9 Indices of lake productivity, lake succession, eutrophication, causes and control.

UNIT-III

- 10 Brief idea about fish biochemistry, by-products and preservation.
- 11 Fish pathology:
 - (a) Bacterial diseases of culturable fishes.
 - (b) Fungal diseases of culturable fishes
 - (c) Worm infections in culturable fishes
 - (d) Prevention and cure of fish diseases
- 12 Brief and comparative classification of fishes (Days classification in detail), fish evolution and phylogeny (Placoderms, Ostracoderms, Dipnoi and Holocephali and brief idea of latimaria cha-

- 13 Respiratory system : gills and accessory respiratory organs.
- 14 Air bladder and weberian ossicles in fishes.

UNIT-IV

- 15 Excretory system and osmoregulation in fishes.
- 16 Reproductive system and its endocrine regulation.
- 17 Age and growth studies in fishes.
- 18 Reproductive and shoaling behaviour in fishes.
- 19 Parental care in fishes.

UNIT-V

- 20 Fish migration with reference to salmon, eels, Tuna, hilsa, mahaseer and major carps.
- 21 Sensory function in the life of fishes.
- 22 Colour, light, sound electric organs and electro-receptors in fishes.
- 23 Economic importance of fishes with special reference to marine fishes of India (sardine, mackerel and Bombay duck).