

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

**PAPER-III
ELECTIVE PAPER GROUP-II
(Organismic Biology stream)**

AQUACULTURE, FISHERIES & ECOTOXICOLOGY

Duration : 3 hours

M.M.100 Marks

UNIT-I

- 1 Definition of fish, fisheries and classification of fisheries.
- 2 Scope and importance of aquaculture in India and world.
- 3 Important culture fishes in India:
 - (a) Biology and culture of Indian major carps- Labeo rohita, Catla catla, and Cirrhinus mrigala
 - (b) Biology and culture of exotic fishes introduced in India:
 - (i) Common carp - Cyprinus carpio
 - (ii) Grass Carp Ctenopharyngodon idella
 - (iii) Silver carp Hypophthalmichthys molitrix
 - (iv) Tilapia - Tilapia mossambica
 - (b) Biology and culture of freshwater prawns in India.
 - (c) Brief account of economic molluscs.

UNIT-II

- 4 Inland capture fishery : reservoir and riverine fisheries (Ganga River System).
- 5 Planning construction and maintenance of fish farm.
- 6 Liming, fertilization and soil micronutrients.
- 7 Freshwater weeds: types, importance to fishery and public health, harmful effects and methods of eradication.
- 8 Predatory fishes, weed fishes, harmful aquatic insects and their control.
- 9 Induced breeding in fishes:
 - (a) Hypophysation technique
 - (b) Ovaprim, ovatide technique
 - (c) Wet and dry bundhs
 - (d) Cryopreservation of gametes and embryos.

UNIT-III

- 10 Fish genetics, hybridization and its importance in fisheries.
- 11 Applications of Biotechnology and genetic engineering in fisheries.
- 12 Monosex culture, super males and their advantages.

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

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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