B.Sc. III

INDUSTRIAL FISH AND FISHERIES

The syllabus is based on 6 theory periods and practical's of 6 periods per week. The examination shall comprised of two theory papers of 50 marks each of three hours duration, practical of 6 hours duration, carrying 30 marks and 20 marks for internal, 10 marks for each paper.

SEMESTER –V

Paper – I
(Cultural & Maintenance of Aquarium Fishes)

Unit – I **Periods**

- Construction of Home aquarium. 03
- Frameless tank & framed tank. 02
- Wooden & metal frame tank. 03
- Design and construction of public fresh water and marine aquaria. 04

Unit – II

- Aquarium Tools and accessories. 02
- Water quality requirement, temperature control. 03
- Setting up an aquarium. 04
- Selection of Aq. plant, ornamental objects and fishes. 03

Unit – III

- Fresh water Aquarium plants, their taxonomy & morphology. 04
- Methods of propagation of aquarium plant & multiplication of aquarium plant. 04
- Nutrient and optimum environmental condition for growth of aquarium plant. 04

Unit – IV

- Nutritional requirement of aquarium fishes. 03
- Different kinds of feeds. 02
- Culture of live fish food organism. 02
- Preparation of artificial food. 02
- Different methods of feeding.

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SEMESTER –V

Paper – II
(Fish Pathology & Post Harvest Technology.)

Unit - I

	Periods
• Aquarium fish diseases in relation to aquaculture.	03
• Bacterial, fungal & viral protozoan, metazoan agent of diseases in fishes.	03
• Different diseases agent, their biology, morphology.	03
• Life cycle and epidemiology.	03

Unit - II

• Non infection and nutritional diseases, in relation to aquaculture practices.	03
• Principle of diseases and fish health management.	03
• Prevention and control method.	02
• Important diseases problem of culture shell fishes and their control.	04

Unit – III

• Traditional & Advance method of fish preservation.	03
• Principles & Importance of fish preservation.	03
• Processing & Preservation of fish product.	03
• Sun drying, salt curing, picking, smoking, chilling, frying & canning.	03

Unit - IV

• Fish biproduct, F.P.C. (Fish protein concentration.), fish meal, fish oil, fish glue, isinglass, etc.	03
• Industrial & pharmaceutical product from sea weeds.	03
• Sanitation & processing in industries.	03
• Quality control of fresh, processed fish & fishery product.	03

Practical of Semester – V

Time: 6 Hrs. **Total Marks: 30**

(Practical will be 6 hrs. duration.)

- Construction of home aquarium.
- Fabrication of public & home aquarium.
- Fabrication of simple net and hand net.
- Water quality analysis.
- Setting up an aquarium & their maintenance
- Culture of common aquarium fish feed.
- Study of common aquarium fish.
- Aquarium fish disease and their treatment.
- Study of morphological characters of common fresh water & marine
- Collection, identification & multiplication of common aquarium plant.
- Methods of isolation & culture of bacteria & fungi.
- Identification methods for common bacterial & fungal pathogen of fish.
- Examination of common fish parasite.
- Fish disease diagnosis.
- Study of normal histology of gills, skin, kidney, spleen & liver & related histology.
- Field visit to aquarium plant, experimental treatment, assessment of water quality.

Distribution of marks

Time: 6hrs. **Total Marks: 30**

Que. 1. Identification of given spot (1-8) ---------- (08)

Que. 2. Culture & identification of fish pathogens bacteria ------- (05) & fungi.

Que. 3. Fish disease diagnosis ---------- (03)

Que. 4. Normal histology or histopathology ----------(04)

Que. 5. Aquarium setting or fabrication of net ----------(04)

Que. 6. Class record ----------(02)

Que. 7. Collection & submission of material of field visit.---------- (04)

B.Sc.III (Semester -V)

Books Recommended:

- **Guide to tropical fish keeping: 1967 – Brymer, J.H. P. Ilifie.**
- **Tropical marine aquaria: 1971 – Col, G.I. Harmlyn.**
- **Tropical fish setting up & maintaining fresh water & marine aquarium: 1972 – Dutta R Octopus Books, LTD.**
- **Aquarium fishes & setting: Amita Saxena.**
- **Aquarium system: 1981 – Himlins A.D. (Ed.) Academic Press.**
- **Living aquarium: 1981 – Hunnam F. Ward Lock.**
- **Aquarium fishes & plants: 1971 – Rataj R and R. Zukal Hamlyn.**
- **Sea water aquarium: 1979 – Spotte A. John Wiley.**
- **Ornamental fish for Garden ponds and home aquarium: 1956 – Ray L.P. Home aquarium.**
- **Complete aquarium : 1963 – Vagi D. and H. Wermuth Thomas.**