

## SEMESTER – IV

### INDUSTRIAL FISH AND FISHERIES

The syllabus is based on 6 theory periods and practicals 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).

#### PAPER – I (FRESH WATER AQUACULTURE)

Unit – I	Periods
<ul style="list-style-type: none"><li>• Fresh water capture fishery in India</li></ul>	03
<ul style="list-style-type: none"><li>• Stocking management, Fish diseases (Viral, Bacterial, protozoan, helminthes and Annelids)</li></ul>	07
<b>Unit – II</b>	
<ul style="list-style-type: none"><li>• Breeding and culture of fresh water prawns.</li></ul>	03
<ul style="list-style-type: none"><li>• Poly- culture with finfish.</li></ul>	02
<ul style="list-style-type: none"><li>• Air breathing fish culture,</li></ul>	03
<ul style="list-style-type: none"><li>• cold water fish culture.</li></ul>	02
<b>Unit – III</b>	
<ul style="list-style-type: none"><li>• Criteria for selection of species for culture.</li></ul>	02
<ul style="list-style-type: none"><li>• Seed procurement from difference sources.</li></ul>	03
<ul style="list-style-type: none"><li>• Supplementary feeds and feeding.</li></ul>	02
<ul style="list-style-type: none"><li>• Methods of fish preservations.</li></ul>	03
<b>Unit – IV</b>	
<ul style="list-style-type: none"><li>• Nutrition requirement and formulation of artificial diets.</li></ul>	02
<ul style="list-style-type: none"><li>• Preparation of fish foods.</li></ul>	02
<ul style="list-style-type: none"><li>• Storage of Feeds, supplementary feedings and feeding techniques.</li></ul>	02
<ul style="list-style-type: none"><li>• Natural food and its importance in aquaculture.</li></ul>	02

- Fishery cooperative societies their structure and functions 02

**SEMESTER – IV  
PAPER – II  
(MARINE WATER AQUACULTURE)**

<b>Unit – I</b>	<b>Periods</b>
• Brackish water fish culture and Mari culture	03
• Characteristic of brackish water.	02
• Brackish water resources of India.	02
• Existing culture practices in bheris, pokkali paddy fields and swamps place in kerala marsh lands.	03
 <b>Unit – II</b>	
• Importance species of cultivable penaeid prawns	02
• Life history of a typical penaeid prawn	02
• Hatchery production of seed and nursery rearing, transportation of seed.	03
• Preparation of stocking ponds, stocking, management and harvesting.	03
 <b>Unit – III</b>	
• Breeding and culture of brackish water fin fishes- milkfish grey mullets pearl-spot, cock-up etc.	06
• Monoculture and poly culture.	04
 <b>Unit – IV</b>	
• Mari-culture of edible oysters, mussels, clams, cock-up, sea Urchins, sea cucumber, etc.	06
• Pearl oyster culture weeds, finfish culture in cages.	04

## **PRACTICAL FOR FOURTH SEMESTER**

- Preparation of nursery, rearing and stocking ponds.
- Identification of aquatic insects, weeds and predator and their control.
- Water quality analyses.
- Feed preparation and feeding.
- Identification of seeds of cultivable fish species, seed stocking.
- Examination of plankton from culture ponds.
- Fish growth, survival and production analyses.
- Identification of important fish species of brackish water, fin-fishes and shellfish and their seed.
- Collection and rearing of brackish water shrimps and fishes.
- Identification of cultivable species of oysters, mussels, calms, sea weeds.
- Visits to prawn hatcheries and Mari culture centers.

### **Distribution of marks:**

Que.1: Identification, classification and comments	06
Que. 2: Water analysis experiments (any one)	03
Que. 3: Characteristics of hatchery system	03
Que. 4: Dissection of any culturable fish	06
Que. 5: Identification of phyto-plankton and zoo-planktone	04
Que 6: Viva-voce	03
Que 7: Record and Submission of tour diary	05
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	30
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## **References:**

1. CRC Hand Book of Mariculture Crustacean Aquaculture : James P. Mcvey
2. Selection and Breeding Programs in Aquaculture : Trygve G. Jedrem
3. Pond Aquaculture Water quality Management : Claude E. Boyd & C.S. Tucker
4. General & Applied Ichthyology: S. K. Gupta & P.C. Gupta
5. Marine Aquaculture , Opportunity for Growth: National Research council
6. Text Book of Fishery science And Indian Fisheries : C.B. L. Shrivastava
7. Fish & Fisheries of India : V.G. Jhingran