DIPLOMA IN PISCICULTURE

(Non-Semester)

(With effect from the academic year 2013-14)

Eligibility for the Course

Candidates for admission to Diploma in Pisciculture could posses a Higher Secondary school Education in Science subjects with Biology

Duration of the Course

One year Diploma in Pisciculture course non-semester for One Year duration

Examination

All the theory paper are of 3hours duration each for maximum of 100 marks with passing minimum of 35 marks Practical examinations are also for 3 hours duration for a maximum of 100 marks and passing minimum of 35 marks.

Question Paper Pattern

Maximum marks: 100 Time: 3 hours

Part A (5 x 3 = 15)

Five short answer questions (One question from each unit)

Part B (5 x 8 = 40)

Paragraph questions (Total questions 8, out of which answers are to be given for any five questions;

Part C (3x 15 = 45)
Total questions 5, out of which answers are to be given for any Three questions;

S.No	Theory & Practicals	Maximum Marks	Minimum Marks
1.	Pisciculture principles and practices	100	35
2.	Fish farm management	100	35
3.	Post Harvest Technology and Marketing	100	35
P1	Practicals - Farm Visit	100	35

Paper 1. Pisciculture principles and practices

Unit 1. Introduction to pisciculture, Pisciculture principles, types and different stages, candidate species, identification of candidate species, global and national status of pisciculture industry.

Unit 2. Site Selection, evaluation and design of fish farming, Project formulation and layout , Critical criteria for construction of pond – water, soil and topography. Economic and social factors, safety security and legal issues.

Unit 3. Biology of cultivable species, Common fin fishes of India- Ornamental Fishes, Freshwater and Marine species

Unit 4. Live feed, types of live feed and enrichment of live feed in fishfarm, Fertilizers and manuring.

Unit 5. Hatchery facility for cultivable fin fishes, wild collection of seeds, techniques of collection; identification and segregation of seeds, packing, transportation and acclimatization.

Suggested Readings

1. Barnabe Gilbert 1990: Aquaculture – Vol. II. Ellis Horwood; 1097 pp.
2. Dilip Kumar, K. 1992: Fish Culture in undrainable ponds. F.A.O. Tech. Paper: 325 p. 240.
3. Pillay, T.V.R., 1990: Aquaculture, Principles and Practices. Fishing News books Ltd: p. 575.
4. Shepherd, J. and Brommage N. 1990: Intensive Fish Farming. B.S.P. Professional Books: p.404.
5. Bardach, E.J. Rhyther, J.H. & W.O. Mc. Larney. 1972: Aquaculture. The Farming and Husbandry of freshwater and Marine organisms. John Wiley and Sons. New York: p 868.
6. Arumugam, N. 2008, Aquaculture, Saras Publication; p 480.

Paper 2- Fish farm management

Unit 1. Soil Management: Pond soil properties and their interaction with water, Pond preparation: soil treatment, liming, drying, tilling, sediment removal, fertilization, bottom raking and disinfection. Soil nutrients and Pond bottom management.

Unit 2. Water quality management: Physico-chemical parameters in farming system- temperature, salinity, dissolved oxygen, pH, ammonia, hardness, turbidity, Redox potential. Eutrophication- nutrient level, Water exchange, aeration, removal of dissolved metabolic organics.

Unit 3. Feed management: Principle of feed preparation, types and different forms of feed, feed ingredients and feed formulation for different cultivable species, probiotics, Feed additives: Natural and synthetic binders.

Unit 4. Methods of feed preparation, Immuno-stimulants, antimicrobials, antioxidants, Chemoattractants; pigments; anabolic agents, feed ration, size, feeding rate and frequency, FCR.

Unit 5. Disease Management, Diseases in pisciculture: viral, bacterial, fungal and parasitic pathogens of fish diagnosis, prognosis and treatment techniques for any two diseases.

Suggested Readings

1. R. Ramachandran Nair Encyclopedia of fish disease –
2. K.P. Biswas Prevention and control of fish and Prawn diseases –
3. Sinderman C.J. Principle diseases of Marine fish and shell fish
4. Pillay,T.V.R. Advances in Aquaculture
5. Milne P H. – Fish and Shell fish farming in coastal waters

Paper 3- **Post Harvest Technology and Marketing**

Unit 1. Harvesting methods in different farming practices, common gears, packing and transportation, Post-harvest spoilage of farmed organisms, deterioration, causes and prevention.

Unit 2. Sanitary and phyto-sanitary requirements for maintenance of quality grading of farmed organisms and their quality evaluation. Chilling and freezing - Principles of chilling and freezing, methods of chilling: transportation andmarketing of chilled fish.

Unit 3. Quality assurance and management in seafood processing: defining HACCP, practical aspects of planning, verification and implementation of HACCP systems. National and international standards.

Unit 4. Preparation of Value added products viz. fish pickle, fish wafers, fish soup powder, fish protein hydrolysate, fish stacks, fillets etc., and other fish by-products.

Unit 5. Marketing: Strategies for domestic marketing of farmed fin fish, price determination. Marketing institutions – Primary institutions- producer , fishermen cooperatives and fisheries corporations. Secondary institutions: middlemen- merchant, agent and speculative middlemen.

Report on Fish pricing/ Market channel/ Processing unit visit.

Suggested Readings

1.Anderson,L.G.The Economics of Fisheries Management.
2. Shang,Y.C. Aquaculture Economics.
3. Fish Processing Technology – T.K.Govindan
4. Fish Processing Technology – Ed. K. Gopakumar
5. Post Harvest Technology – K.K. Balachandran

Practicals- Farm Visit

1. Collection and identification of cultivable fin fishes
2. Live feed identification
3. Packing technique of seeds
4. Estimation of Water quality parameters
5. Estimation of soil nutrients
6. Formulation and preparation of balanced feed
7. Isolation and identification of microbial pathogens