

**DETAILED SYLLABUS FOR THE POST OF  
FISHERIES ASSISTANT IN FISHERIES DEPARTMENT  
(Cat.No.: 249/2021)**

**(Total Marks- 100)**

**Module 1. DIFFERENT AQUACULTURE SYSTEMS (14 marks)**

Morphology of teleost fish; elasmobranch fish and penaeid shrimp; Legislation - CRZ, CAA, National and state level fisheries institutes; Physico-chemical & biological parameters of water; Site selection, design & construction of fish farms; Components and accessories of an Aquafarm; Pre-stocking management; Process of stocking; Post stocking management; Harvesting of fish; Familiarization of different aquaculture systems - extensive, semi-intensive, intensive, super intensive (biofloc & recirculatory aquaculture systems (RAS)), traditional prawn filtration system; pond culture; pen culture; cage culture.

**Module 2. CULTURE OF COMMERCIALLY IMPORTANT FINFISHES AND  
SHELLFISHES (14 marks)**

Culture of carps; Culture of penaeid shrimps; Culture of Fresh Water Prawn; Culture of Genetically Improved Farmed Tilapia (GIFT); Culture of Pearl Spot; Culture of Sea Bass; Culture of Mullet and Milk Fish; Culture of Air breathing fishes; Culture of Mud Crab; Culture of Mussels; Integrated Multitrophic aquaculture (IMTA)

**Module 3. SEED PRODUCTION OF COMMERCIALLY IMPORTANT FIN AND  
SHELLFISHES (14 marks)**

Sexual dimorphism in fishes; Hermaphroditism; Induced breeding; Selective breeding; Seed production of Carps: (Induced breeding and larval rearing, Hatchery systems - Hapa system, Chinese hatchery system and Jar hatchery system); Seed production of Tilapia (GIFT); Seed production of Pearl Spot; Seed production of Air breathing Fishes (*Clarius batracus* & *Heteropneustes fossilis*); Seed production of Asian Sea bass; Seed production of Penaeid Shrimps (Induced maturation techniques; Packing and transportation of shrimp seed); Seed production of Giant Freshwater Prawn; Seed collection of Bivalves (Oyster and Mussels); Preparation of Oyster and Mussel Ren.

**Module 4. IMPORTANT AQUARIUM FISHES, THEIR BREEDING AND AQUARIUM  
SETTING (14 marks)**

Familiarization with popular freshwater and marine aquarium fishes; Classification of aquarium fishes - egg layers and live bearers; Aquarium plants - rearing and propagation; Water quality maintenance (dissolved O<sub>2</sub>, CO<sub>2</sub>, NH<sub>3</sub>, NO<sub>2</sub>, NO<sub>3</sub>, Alkalinity & Acidity); Aquarium equipments and accessories (Aerators, Heaters, Illuminating lamps, Sand filter bed, Submersible pumps, different types of filters); Principle and functioning of Biofilter; Making of an aquarium tank; Assembling an aquarium; Fish Diseases (fin rot, tail rot, dropsy, protozoan infections)-quarantine, prophylactic, therapeutic measures; Brood stock maintenance, breeding and seed production of freshwater aquarium fishes; Life feed culture; Nursery rearing.

**Module 5. BIOCHEMICAL CHANGES IN FISH & VARIOUS FISH PRESERVATION METHODS (8 marks)**

Proximate composition of fish - protein, fish lipids, vitamins & minerals, NPN compounds, importance of fish as food. Material; Fish spoilage - Post mortem changes in fish; Sensory evaluation; Onboard and onshore fish handling - icing/chilling, cold chain; Fish preservation methods - Drying: principle, solar/mechanical driers, common defects in dried fish; Freezing technology; principle, different types of freezers; freezing of fish, prawn, cephalopods & crabs; common defects in freezing; Irradiation preservation; Marinading ; Smoking

**Module 6. BACTERIOLOGY AND SEAFOOD QUALITY CONTROL (6 marks)**

Bacterial structure, growth; Classification of bacteria based on temperature, salinity, ability to cause disease; Sampling methods; Methods of sterilization; Total Plate Count; Microbiology laboratory equipments; Microbes in Public health - *Escherichia coli*, *Faecal Streptococcus*, *Staphylococcus aureus*, *Salmonella typhi*, *Vibrio cholera*, *Vibrio parahaemolyticus*, *Clostridium botulinum*, *Shigella*; Microbial limits in seafood; Good Manufacturing Practices (GMP) followed in processing plants; Standard Sanitary Operating Procedures (SSOP) followed in processing plants; Chlorination in processing plants; National and International quality standards; Various inspection systems; Hazard Analysis and Critical Control Point (HACCP); Registers to be maintained in processing plants.

**Module 7. VALUE ADDED FISHERY PRODUCTS AND FISHERY BYPRODUCTS (8 marks)**

Value Added Fishery Products - marinades, cutlets, wafers, sausages, fish balls, fish finger, fish momos, FPC, fish soup powder, dried prawn pulp, masmin flakes. Fishery byproducts - Chitin and chitosan; Shrimp extract; Fish meal; Fish body oil; Pearl essence; Isinglass; Fish silage. Miscellaneous Aquatic Products - Algin; Agar agar;

Carrageenan; Beche-de-mer, Ambergris; Packaging of fishery products - Packing materials; Modern packaging techniques – CAP, MAP, Vacuum packing

**Module 8. DIFFERENT TYPES OF FISHING GEARS AND FISHING METHODS  
(10 marks)**

Traditional crafts: Cattamaran, dugout, outrigger and plank built canoes; their characteristics; construction methods; advantages and disadvantages. Mechanised crafts: Gill netter, trawler, purse seiner, long liner, combination vessel, factory vessel. Boat building materials: wood, steel, ferrocement, FRP, aluminium, iron, brass and copper; their advantages and disadvantages. Common fishing methods: Trawling-pelagic, mid water and bottom; beam trawling, otter trawling, pair trawling, deep sea trawling; gill netting; purse seining; hand lining; trolling; squid jigging; pole and line; Chinese net; stake nets and dip nets.

**Module 9. NETTING MATERIALS AND NET MAKING (5 marks)**

Netting materials-natural - cotton, hemp, coir, jute, manila, sisal; synthetic - nylon, polypropylene, polyethylene (monofilament, multifilament, tape, spun). Natural, synthetic and wire ropes; different types of hooks, sinkers, floats and baits; different types of knots; seaming; joining; braiding; creasing; cutting; tailoring; mounting; assembly; net mending

**Module 10. FISHING AIDS AND INSTITUTIONS (7 marks)**

Fish finding devices; FAD's; Deep sea fishing - Scope and opportunities; deep sea resources; Navigation and seamanship-Navigational equipments and aids, Life saving appliances; Conservation of fishery resources; Responsible fishing, Marine legislation; Artificial reefs; destructive fishing methods; EEZ; KMFRA; INCOIS; CMFRI; KUFOS; MPEDA; State Fisheries Department; trawl ban

**NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper.**