

DETAILED SYLLABUS FOR THE POST OF FISHERIES OFFICER

FISHERIES DEPARTMENT

(Category Nos: 746/2021)

(TOTAL MARKS – 100)

1. Fisheries Resource Management:- Global, national and state scenario of marine fisheries and inland fisheries. Cold water fisheries of India. GIS and Remote sensing in fisheries. Biological structure of fisheries resources in space and time. Indicators of dynamics in a fishery resource. Principles of stock assessment. Population age structure. Theory of life tables, Statistical models of fish stock assessment. Estimation of total fishing and natural mortality. The concept of MSY and MEY. Biological symptoms of under- fishing and over- fishing. Growth over - fishing and recruitment over - fishing. Code of conduct for responsible fisheries. Eumetric fishing. Open access fisheries. CPUE (10 Marks)

2. Fishing Craft Technology :- Traditional and modern fishing crafts of India; Mechanization of fishing crafts, Boat building and maintenance; Stability of fishing vessel; marine engine systems; Deck layout, deck fitting and fishing equipment; Rules and regulations for fishing vessel fabrication, operation and safety. Vessel monitoring systems. (5 Marks)

3. Fishing Gear Technology:- Gears used in relation to fish and fishing area. Fishing gear materials; Yarn numbering systems. Mounting of webbing. Accessories for fishing gear. Hooks, maintenance of gears. Preservation of netting and other accessories. Selection of gear materials, Parts of a trawl net, purse seine, gill net and tuna long lines. Modern commercial fishing methods, Fish finding equipments. (5 Marks)

4. Navigation and Seamanship:- Fire fighting and lifesaving appliances, Electronic navigation and communication aids, International laws and agreements of the sea. (5 Marks)

5. Fish Preservation:- Composition and nutritional value of fish. Spoilage of fish and fishery products; Freezing, drying and dehydration, Marinated and fermented fish products, canning, freeze-drying, irradiation, cryogenics. Laws of thermo dynamics; refrigeration cycle; Heat load calculation ; refrigerants; freezers; cold storages; freezing plants, solar dryers, ice manufacturing, defrosting; thawing . Packaging materials for different products. Transportation and storage of fresh fish and frozen fish (10 Marks)

6. Quality Standards:- Assessment of quality of seafood by instrumental and chemical methods; fish food born human pathogens; Concept of quality management; Quality standards; Fish plant sanitation and personal hygiene ; Seafood Export regulations. Food safety standards. (5 Marks)

7. Aquatic Environment Management:- Marine, freshwater and brackish water environments. Water quality parameters, limnology, waves and tides. Water masses, winds, clouds, ocean currents, migration of fishes, biodiversity indices, mangroves, sea grasses, aquatic flora and fauna of ecological significance. Aquatic pollution and mitigation (5 Marks)

8. Farming of Food Fishes and Shell Fishes:- Global national and state scenario. Water as a medium of culture, different systems of aquaculture for the major candidate species, integrated fish farming, sewage-fed fish culture, organic recycling and detritus food chain. Recent trends and

technologies in aquaculture. Use of agro industrial waste and biofertilizers in aquaculture. Water and soil quality management, Ecosystem management in aquaculture. Climate smart aquaculture. Breeding and hatchery management of potential finfish and shell fish; live food organisms; nutritional requirements; engineering aspects of aquaculture farm and hatcheries. Fish feed and fish nutrition

(10 Marks)

9.Ornamental Fish Culture:-Breeding and rearing of exotic and indigenous ornamental fishes; Fabrication, setting up and maintenance of fresh water and marine aquarium; World trade and export potential; Trade regulations in relation to ornamental fishes. Green certification, live feed **(5 Marks)**

10.Aquatic Animal Health Management:- Investigation, symptoms, diagnosis and therapeutic applications of diseases; fish pharmacology; fish toxicology; immune stimulants and bioremediation. Probiotics, Prebiotics, AMR,BMP, Quarantine, emerging pathogens, non-infectious diseases **(10 Marks)**

11.Fisheries Statistics :-Probability, random variable, concepts of Binomial, Poisson and Normal distributions and their use in fisheries. Basic concept of sampling distribution; standard error and central limit theorem, tests of significance based on normal, t, chi-square and F distributions. Relation between correlation and regression, Length weight relationship in fishes; applications of linear regression in fisheries. Methodology for estimation of marine fish landings in India, Estimation of inland fish production in India and problems encountered **(10 Marks)**

12.Fisheries Extension :- Principles of Extension education; types of education; Fisheries Extension methods; Basic principles of teaching and learning; Government and Non - government organizations involved in fisheries extension of India; Fisheries co management; Adoption and diffusion of innovations, Transfer of technology process, Extension programme planning and evaluation;RRA,PRA, PTD; Rural sociology; important sociological concepts-Social problems and conflicts in fisheries; Social control ;Gender issues in fisheries. **(10 Marks)**

13.Fishery Economics:-Elasticity in fisheries managerial decision; Farm production economics; production functions in fisheries; break even analysis of fish production system; concepts of externalities and social cost; factors of production, marginal cost and return; farm planning and budgeting . Accounting, measurement and determinants of national income, contribution of fisheries to GNP and employment; balance of payments, economic growth and sustainable development. GATT and WTO in fisheries ; NTBs and Agreement on Anti- dumping; Fisheries trade and environment ;Impact of globalization in fisheries. Patenting process, Agreement on TRIPS. Bio-piracy. GMOs in fisheries. **(5 Marks)**

14.Fisheries Administration and Legislation:- Fisheries and aquaculture legislations at Central and State level; Development and regulatory activities of Central, State and Local government in aquaculture and fisheries; Functions and powers of functionaries under fisheries administration; Different central and state level fisheries institutions; Principles of organization and management of public enterprise. Fisheries development over five year plans; International fisheries organizations. Schemes and incentives for promotion of entrepreneurship in fisheries sector. Government policy on small and medium Enterprises (SMEs)/SSIs. Export and import Policies relevant to fisheries sector. Fisheries plans and programmes by Government **(5 Marks)**

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