R2055

Sub. Code
547101

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

First Semester

Fisheries Science

INTEGRATED TAXONOMY OF FINISH AND SHELLFISHES

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct option.

1. What is the phenetic theory of taxonomy? (CO1, K2)
   (a) The theory that classification should be based on overall similarity
   (b) The theory that classification should be based on shared ancestry
   (c) The theory that classification should be based on evolutionary relationships
   (d) The theory that classification should be based on function

2. What is the name of Linnaeus's book that classified plants and animals? (CO1, K2)
   (a) Systema Naturae
   (b) On the Origin of Species
   (c) Philosophiae Botanicae
   (d) Historia Plantarum

3. Which of the following is not a morphometric characteristic used for taxonomic classification of crustaceans? (CO2, K2)
   (a) Carapace length (b) Eye diameter
   (c) Antenna length (d) Abdomen width

4. Which class of Crustacea includes commercially important shrimps, prawns, and lobsters? (CO2, K2)

(a) Branchiopoda (b) Malacostraca

(c) Remipedia (d) Copepoda

5. Bivalves are classified based on the : (CO3, K5)

(a) Number of shells

(b) Presence or absence of an operculum

(c) Hinge structure and ligament type

(d) Foot morphology and mantle extensions

6. Charybdis clams possess : (CO3, K5)

(a) Thick shells with radiating ribs and byssal attachment

(b) Elongated siphon and infaunal burrowing behavior

(c) Flattened shells and commensal relationships with hermit crabs

(d) Internal shell features and complex reproductive strategies

7. Which of the following taxa includes both inland and marine finishes? (CO4, K2)

(a) Cyclostomata (b) Actinopterygii

(c) Elasmobranchii (d) Sarcopterygii

8. Salmonid fishes like salmon and trout are categorized within the class : (CO4, K2)

(a) Actinopterygii (b) Sarcopterygii

(c) Chondrichthyes (d) Holocephali

9. Which technique is commonly used to study genetic variation in fish species? (CO5, K4)

(a) Protein analysis

(b) RFLP

(c) DNA polymorphism

(d) Microsatellite typing

10. Which technique involves the use of specific enzymes to cut DNA at specific sites and create DNA fragments of different lengths? (CO5, K4)

(a) Protein analysis

(b) RFLP

(c) Microsatellite typing

(d) DNA polymorphism

Part B ($5 \times 5 = 25$)

Answer **all** the questions not more than 500 words each.

11. (a) Compare and contrast the different theories of taxonomy. (CO1, K2)

Or

(b) Explain the concept and different types of nomenclature in taxonomy. (CO1, K2)

12. (a) Explain how meristic characteristics contribute to the identification of commercially important crustacean species. (CO2, K2)

Or

(b) Distinguish the characteristics of Malacostraca. (CO2, K2)

13. (a) Summarize the general characteristics of the phylum Mollusca. (CO3, K5)

Or

(b) Explain the importance of Bivalves. (CO3, K5)

14. (a) Compare the different placoid scales of marine fin fish. (CO4, K2)

Or

(b) Illustrate the general morphology of marine fin fishes and explain its function. (CO4, K2)

15. (a) Explain the concept of DNA barcoding and how it is used in fish taxonomy. (CO5, K4)

Or

(b) Outline the principles and applications of RFLP. (CO5, K4)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1000 word each.

16. (a) Discuss the significance of the National Digital Repository for Museums of India in preserving and documenting specimens. (CO1, K2)

Or

(b) What are the criteria used for generic and specific identification in taxonomy? (CO1, K2)

17. (a) Outline the economic and ecological significance of crustaceans. (CO2, K2)

Or

(b) Explain the key characters of two commercially important shrimp species based on their morphometric and meristic characteristics. (CO2, K2)

18. (a) Outline the classification of phylum Mollusca. (CO3, K5)

Or

(b) Explain the general characteristics, structure and classification of the class gastropoda. (CO4, K2)

19. (a) Express the taxonomical significance of commercially important marine finishes. (CO3, K5)

Or

(b) Compare the morphological features, ecological adaptations and economical importance of marine fin fishes. (CO4, K2)

20. (a) Discuss commonly used molecular techniques for DNA polymorphism analysis in fishes. (CO5, K4)

Or

(b) Illustrate the significance of phylogenetic tree in molecular taxonomy. (CO5, K4)

———————

R2056

Sub. Code
547102

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

First Semester

Fisheries Science

INLAND FISHERIES

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct option:

1. Which of the following countries is the world's largest producer of inland fish? (CO1, K4)

   (a) United States (b) China

   (c) Russia (d) Brazil

2. Which of the following is not practice for inland fish capture? (CO1, K4)

   (a) Using size limits to protect Juvenile fish a sustainable

   (b) Employing fishing gear with high by catch

   (c) Rotating fishing grounds to allow for population recovery

   (d) Stocking water bodies with native fish species

3. Which state are found in higher area of Small reservoir? (CO2, K3)

(a) Madhya Pradesh

(b) Andhra Pradesh

(c) Karnataka

(d) Tamil Nadu

4. Most freshwater fish have a streamlined body with fins for (CO2, K3)

(a) Burrowing

(b) Navigation and Manoeuvrability of in water

(c) Camouflage on land

(d) All of the above

5. Theels and bheels are terms used for what type of freshwater body important for inland fisheries in India? (CO3, K5)

(a) Flowing rivers

(b) Deep Lakes

(c) Seasonal floodplain wetlands

(d) Ocean bays

6. Which of the following factors to most important for fish production in wetland ecosystem? (CO3, K5)

(a) High salinity levels

(b) Presence of submerged plants

(c) Strong water flow to disperse eggs

(d) Deep opes water with minimal cover

7. High rate of Sedimentation caused due to (CO3, K5)

(a) Deforestation in Catchment areas

(b) Desertification

(c) Blonketing of Soil-water interface

(d) All of the above

8. Which are the exotic fish sp. of *Cyprinuscarpio* was reported top contribute substantially by Commercial catches of river Thelum? (CO4, K5)

(a) *C. Carpiospecularis I*

(b) *C. Carpiocommunis*

(c) Both (a) and (b)

(d) None

9. Eury thermal coldwater fishes like (CO5, K5)

(a) *Schizothoraleichordsoni*

(b) *Cyprinids carpio*

(c) Tibetiansnow trout

(d) All the above

10. What is the abbreviation of NRCCWF (CO5, K5)

(a) National Research Centre for Cold Water Fisheries

(b) National Research of Central Cold Water Fisheries

(c) National Resource Centre for Cold Water Fisheries

(d) National Research Council of Cold Water Fisheries

Part B (5 × 5 = 25)

Answer **all** questions not more than 500 words each.

11. (a) Briefly explain the history of Global and Indian Scenario of Inland captive fisheries. (CO2, K3)

Or

(b) Summarize the role of Government and NGD's in the Inland fishery development. (CO1, K4)

12. (a) Discuss the classification of Reservoir. (CO2, K3)

Or

(b) Explain the current status of productivity levels and management practices in inland fisheries.(CO2, K3)

13. (a) Write the prospects of culture based System. (CO2, K4)

Or

(b) Illustrate the overview of Bheelfisheries resources. (CO3, K5)

14. (a) Differentiate between post stocking management and pre stocking management. (CO3, K5)

Or

(b) Analyze the impact of fish migration and restoration of riverine vegetation. (CO3, K4)

15. (a) Evaluate the sports fisheries in India. (CO3, K3)

Or

(b) What are the ecological requirements of cold water fish species? (CO3, K4)

Part C (5 × 8 = 40)

Answer the questions not more than 1000 words each.

16. (a) Summarize the problems and management of fisheries resources in India? (CO1, K4)

Or

(b) What initiatives have governments taken to promote Sustainable inland fisheries management? (CO1, K2)

17. (a) What are the major riverine system in India that have the potential for freshwater fisheries development? (CO2, K3)

Or

(b) Elaborate the role of stocking programms in enhancing reservoir fisheries, and how can they be optimized? (CO2, K3)

18. (a) Determine the key factors that determine the productivity and biodiversity of wetland fisheries. (CO3, K4)

Or

(b) How can fisheries management adapt to the shifts in fish distribution and abundance caused by climate change? (CO3, K5)

19. (a) What are the challenges and strategies for preventing and managing the spread of exotic species in aquatic ecosystem? (CO3, K5)

Or

(b) How can habitat modification improve fish migration, spawning and nursery habitats? (CO5, K4)

20. (a) How can cold-water fisheries be sustainably harvested, and what are the benefits and limitations of different fishing gear and practices? (CO4, K5)

Or

(b) How can sports fishery be integrated with conservation effort such as habitat restoration? (CO3, K5)

———————

R2057	Sub. Code
	547103

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

First Semester

Fisheries Science

COASTAL AND MARINE FISHERIES

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct option.

1. Which type of fishery resource is known for its diverse ecosystem and rich biodiversity? (CO1, K2)
   (a) Backwaters
   (b) Mangroves
   (c) Brackish water impoundments
   (d) Lagoons

2. Which region in India is well-known for its brackish water impoundments and fishery resources? (CO1, K2)
   (a) Kerala (b) West Bengal
   (c) Odisha (d) Gujarat

3. Which fishing gear is commonly used in pelagic fisheries? (CO2, K2)
   (a) Trawl nets (b) Bottom longlines
   (c) Dredges (d) Gillnets

4. Which species is an example of a demersal fish? (CO2, K2)
   (a) Tuna (b) Cod
   (c) Herring (d) Mackerel

5. Mangroves are coastal ecosystems characterized by : (CO3, K3)

(a) Dense coniferous forests
(b) Salt-tolerant trees and shrubs
(c) Broadleaf deciduous trees
(d) Tundra vegetation

6. What is the term for the network of roots in mangrove trees that help stabilize the soil and provide structural support? (CO3, K3)

(a) Aerial roots (b) Prop roots
(c) Stilt roots (d) Pneumatophores

7. High seas fisheries occur : (CO4, K2)

(a) Within exclusive economic zones
(b) Within territorial waters
(c) Beyond 200 nautical miles from shore
(d) Within coastal lagoons

8. Which fishing gear is commonly used in offshore fisheries? (CO4, K2)

(a) Trawl nets (b) Handlines
(c) Fish traps (d) Dredges

9. Marine biodiversity conservation aims to : (CO5, K2)

(a) Reduce species diversity
(b) Maximize overfishing
(c) Protect and sustain marine ecosystems
(d) Increase habitat destruction

10. Which species is categorized as endangered? (CO5, K2)

(a) Indeterminate species
(b) Extinct species
(c) Critically endangered species
(d) Abundant species

Part B $(5 \times 5 = 25)$

Answer **all** the questions not more than 500 words each.

11. (a) What is the historical significance of mangroves in India? (CO1, K2)

Or

(b) Explain the national status of fisheries resources in India. (CO1, K2)

12. (a) Distinguish some important finfish resources in demersal, pelagic and brackish water systems. (CO2, K2)

Or

(b) Illustrate some conservation strategies that can be implemented for finfish and shellfish resources. (CO2, K2)

13. (a) Express the prospects of culture-based systems in enhancing fishery resources. (CO3, K3)

Or

(b) Explain how coastal communities can adapt to the impacts of climate change on fishery resources. (CO3, K3)

14. (a) Outline the importance of fisheries co-management. (CO4, K2)

Or

(b) Summarize the social issues related to the sustainability of fisheries. (CO4, K2)

15. (a) Simplify the potential impact of bioinvasion. (CO5, K2)

Or

(b) Distinguish the importance of marine biodiversity conservation. (CO5, K2)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1,000 words each.

16. (a) Examine the contribution of lagoons, mangroves, estuaries and backwaters in India to the livelihoods of local fishing communities. (CO1, K2)

Or

(b) Outline the factors led to the decline or degradation of fishery resources of India. (CO1, K2)

17. (a) Illustrate some challenges faced in managing multi-gear fisheries. (CO2, K2)

Or

(b) Express the contribution of marine protected areas to the conservation of finfish and shellfish resources. (CO2, K2)

18. (a) Describe the current status of fishery resources both at the national and international level. (CO3, K3)

Or

(b) Summarize the impact of climate change on fishery resources. (CO3, K3)

19. (a) Classify the economic factors influence the sustainability of fisheries. (CO4, K2)

Or

(b) Explain the current national and international status of Illegal, Unreported, and Unregulated (IUU) fishing. (CO4, K2)

20. (a) Outline the importance of coral reef ecosystem on marine biodiversity. (CO5, K2)

Or

(b) Illustrate the conservation strategies to protect the endangered, indeterminate and extinct species. (CO5, K2)

———————

R2058

Sub. Code
547104

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

First Semester

Fisheries Science

FRESHWATER AQUACULTURE

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the objective type questions by choosing the correct option.

1. Which one of basic parameters is required for finfish hatchery site selection? (CO1, K1)
   (a) Soil composition
   (b) Soil pH
   (c) Water availability
   (d) All of the above

2. NFBD is located in (CO1, K3)
   (a) Chennai (b) Goa
   (c) Mumbai (d) Hyderabad

3. Induced breeding technique is used in (CO2, K1)
   (a) Marine fishery (b) Inland fishery
   (c) Culture fishes (d) Capture fishery

4. Inland fisheries are (CO2, K1)

(a) Capturing fishes in fresh water

(b) Capturing fishes in sea

(c) Capturing fishes from deep sea

(d) All of the above

5. Which one of the following is the physical property of water? (CO3, K4)

(a) Salinity (b) Density

(c) Dissolved oxygen (d) pH

6. Catla is a ———— (CO3, K3)

(a) Mid water feeder (b) Surface feeder

(c) Both (a) and (b) (d) Column feeder

7. Which is prawn? (CO4, K5)

(a) *Scylla serrata*

(b) *Mugil cephalus*

(c) *Macrobrachium rosenbergi*

(d) All of the above

8. Identify the edible freshwater teleost (CO4, K3)

(a) *Hilsa ilisha* (b) Catla catla

(c) *Rays* and *skates* (d) *Sharks*

9. Aquaponics is the combination of ———— and ———— (CO5, K6)

(a) Plants and water

(b) Hydroponics and aquaculture

(c) Aquaculture and water

(d) Hydroponics and plants

10. The chemical that is deadly to fish and must be removed from water is ———— (CO5, K5)

(a) Nitrogen (b) Fluoride

(c) Potassium (d) Chlorine

Part B ($5 \times 5 = 25$)

Answer **all** the questions not more than 500 words each.

11. (a) Explain about semi-intensive farming practices. (CO1, K1)

Or

(b) How do you select the suitable species for aquaculture practices? (CO1, K4)

12. (a) Write brief account on broodstock management practices. (CO2, K1)

Or

(b) Describe about prawn hatchery production techniques. (CO2, K3)

13. (a) Write a short note on nursery site selection for finfish. (CO3, K1)

Or

(b) Write a short account on present global status of nursery. (CO3, K1)

14. (a) Give a brief account on genetically improved farmed tilapia. (CO4, K5)

Or

(b) Explain about the fish culture pond preparation practices. (CO4, K3)

15. (a) Write a brief note on paddy field fish culture practices. (CO5, K2)

Or

(b) Describe about constraints and economics of IFS. (CO5, K1)

Part C (5 × 8 = 40)

Answer **all** questions not more than 1000 words each.

16. (a) Write a note on present status and scope of fish farming in India. (CO1, K2)

Or

(b) Describe about the major Indian cultivable carps. (CO1, K1)

17. (a) How do you select the suitable site for fish hatchery? (CO2, K3)

Or

(b) Write an essay on health management practices in prawn nursery production. (CO2, K5)

18. (a) Compare and contrast – lentic and lotic ecosystem and its culture practices. (CO3, K6)

Or

(b) Explain in detail about freshwater peal culture. (CO3, K2)

19. (a) Write a detailed account prawn farm management practices. (CO4, K3)

Or

(b) Describe about integrated fish farming and its significance. (CO4, K2)

20. (a) Write an account on aquaphonics and its types. (CO5, K2)

Or

(b) How do you culture the fishes in community ponds? (CO5, K2)

———————

R2059	Sub. Code
	547501

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

First Semester

Fisheries Science

Elective : AQUATIC ECOLOGY AND BIODIVERSITY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct option.

1. The largest ecosystem on the earth is ————(CO1, K1)
   (a) Lake (b) Sea
   (c) Ocean (d) Bay

2. The bottom of the Ocean is called ———— (CO1, K1)
   (a) Photic zone (b) Aphotic zone
   (c) Benthic zone (d) Pelagic zone

3. The arm of the sea is otherwise called ————(CO2, K2)
   (a) Corals (b) Wetlands
   (c) Estuary (d) Backwaters

4. The red algae are otherwise called ———— (CO2, K1)
   (a) Phaeophyceae (b) Chlorophyceae
   (c) Rhodophyceae (d) None of the above

5. Which one of the following seas has the highest salinity? (CO3, K5)

(a) Dead Sea (b) Arabian Sea

(c) Red Sea (d) Black sea

6. The literal meaning of the word "Tsunami" is called ———— (CO3, K6)

(a) Big waves (b) Cyclonic wave

(c) Tidal wave (d) Harbour wave

7. Biogeochemical cycles are also known as (CO4, K1)

(a) Water cycle (b) Gaseous cycle

(c) Material cycle (d) Sedimentary cycle

8. Which of the following is not a biogeochemical cycle? (CO4, K2)

(a) Water cycle (b) Nitrogen cycle

(c) Carbon cycle (d) Oxygen cycle

9. IUCN documentation of rare and endangered species of animals and plants in ———— book. (CO5, K6)

(a) Red data book (b) Blue data book

(c) Green data book (d) White data book

10. ———— is the example for *ex-situ* conservation. (CO5, K1)

(a) National Park

(b) Wildlife sanctuary

(c) Seed bank

(d) All of the above

Part B (5 × 5 = 25)

Answer **all** the questions not more than 500 words each.

11. (a) How do you classify the marine ecosystem?(CO1, K2)

Or

(b) Write a short note on ecological niche. (CO1, K1)

12. (a) Write brief account on vertical migration of zooplankton. (CO2, K1)

Or

(b) Explain about the salient features of deep-sea ecosystem. (CO2, K3)

13. (a) Describe about ocean currents and its types. (CO3, K2)

Or

(b) Write a short note on salinity and its significance. (CO3, K1)

14. (a) Describe about carbon credit. (CO4, K1)

Or

(b) Explain about various pollution control measures. (CO4, K3)

15. (a) Write a brief note on types of biodiversity. (CO5, K2)

Or

(b) Describe about the factors influencing the aquatic biodiversity. (CO5, K1)

Part C (5 × 8 = 40)

Answer **all** questions not more than 1000 words each.

16. (a) Write a detailed account on various components in aquatic ecosystem. (CO1, K2)

Or

(b) Describe about the concepts of habitat and ecological niche. (CO1, K1)

17. (a) Explain about the biological features of seagrass ecosystem. (CO2, K1)

Or

(b) Write an essay on role of plankton in maintaining the fisheries. (CO2, K3)

18. (a) Explain about the major classification of plankton. (CO3, K5)

Or

(b) Explain in detail – ocean acidification and its impact on marine resources. (CO3, K1)

19. (a) Write an essay on biogeochemical cycle. (CO4, K2)

Or

(b) Describe about global warming and its impacts on marine biodiversity. (CO4, K1)

20. (a) Describe about the definition and concept of biodiversity. (CO5, K3

Or

(b) Write an account on global diversity patterns and loss of biodiversity. (CO5, K2)

———————

R2060

Sub. Code
547301

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

Third Semester

Fisheries Science

COASTAL AQUACULTURE AND MARICULTURE

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. Who is father of Aquaculture in India? (CO1,K2)

   (a) Hiralal Chaudhuri

   (b) M. S. Swaminathan

   (c) Seth Green

   (d) Verghese Kurien

2. Which state has the shortest coastal tine? (CO1,K6)

   (a) Kerala

   (b) Tamil Nadu

   (c) Gujarat

   (d) Goa

3. Central Institute of Freshwater Aquaculture (CIFA) located at (CO2,K6)

(a) Bhubaneswar

(b) Mangalore

(c) Cochin

(d) Tuticorin

4. Which among the following is catadromous fish (CO2,K6)

(a) Striped bass

(b) Sea lamprey

(c) Salmon

(d) Eels

5. Which state has highest aquaculture production? (CO3,K6)

(a) Odisha

(b) West Bengal

(c) Kerala

(d) Andhra Pradesh

6. The scientific name of Asian sea bass is (CO3,K6)

(a) Mugil cephalus

(b) Etroplus suretensis

(c) Lates Calcarifer

(d) Chanos chanos

7. Pokkali field is found in (CO4,K2)

(a) Odisha

(b) Kerala

(c) Gujarat

(d) Goa

8. Which is the last larval stage of penaeid prawns? (CO4, K6)

(a) Nauplius

(b) Mysis

(c) Zoea

(d) Megalopa

9. A fish can live in water with a wide range of salinity. (CO5,K2)

(a) Euryhalin

(b) Stenohaline

(c) Thermohaline

(d) Thermolabile

10. The native of common carp is ———— (CO5,K2)

(a) India

(b) Pakisthan

(c) China

(d) Maldives

Part B (5 × 5 = 25)

Answer **all** the questions not more than 500 words each.

11. (a) Describe detailed account on the current potential of brackish water aquaculture in India. (CO1, K4)

Or

(b) Write in detail your view on the development of world marine aquaculture. (CO1,K2)

12. (a) Explain the steps of pond preparation for shrimp farming. (CO2,K2)

Or

(b) Describe the good pond management practices in aquaculture. (CO2,K4)

13. (a) Draw a neat sketch of the life cycle of Penaeus monodon and explain each stage. (CO3,K4)

Or

(b) Explain the traits of important cultivable shellfishes. (CO3,K4)

14. (a) Discuss the economic importance of cephalopods with examples. (CO4,K4)

Or

(b) Explain the salient features of seaweed farming. (CO4,K2)

15. (a) List the cultivable marine finfishes and explain their various culture types. (CO5,K2)

Or

(b) Write a note about water quality criteria and requirements for aquaculture? (CO5, K4)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1000 words each.

16. (a) Explain in detail the scope of coastal aquaculture in India. (CO1, K4)

Or

(b) Write an essay on intensive aquaculture system of shrimp farming and its merits and demerits. (CO1, K4)

17. (a) Describe potential species and criteria for selection of species for cage culture. (CO2,K4)

Or

(b) Explain the various steps involved in the oyster farming techniques in raft culture. (CO2,K4)

18. (a) Describe in detail the feed formulation and processing techniques in shrimp feed production. (CO3,K4)

Or

(b) Explain in detail about Bio-floc technology in fish farming. (CO3,K4)

19. (a) Explain the distribution of the pearl oyster and describe pearl harvesting, grading and economics of pearl culture in detail. (CO4,K4)

Or

(b) State the present status, problems and prospects of seed production of commercially important cultivated molluscs in India. (CO4,K4)

20. (a) Explain in detail RAS system of aquaculture. (CO5, K4)

Or

(b) Write an essay on feed and water quality management of nursery ponds in Catla catla culture. (CO5, K4)

———————

R2061

Sub. Code
547302

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

Third Semester

Fisheries Science

ORNAMENTAL AQUACULTURE

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct option.

1. Who was the first ornamental fish breeder succeeded in breeding paradise fish? (CO4, K3)

   (a) Carbonnier (b) S.H. Ward

   (c) Francis Leuvin (d) Kirpichniknov

2. Scientific name of Glass fish is (CO3, K2)

   (a) Brachydaniorerio

   (b) Chandra nama

   (c) Botialohachata

   (d) Labeonanding

3. Which is a modified external canister filter? (CO3, K2)

(a) Canister trickle filter

(b) Trickle filter

(c) Submersible power

(d) Submenisble air lifting filter.

4. Free CO_2 at a concentration of more than ———— ppm isdeterimental to ornamental fishes (CO3, K2)

(a) 10 ppm (b) 15 ppm

(c) 20 ppm (d) 25 ppm

5. Which feed canbe stuck at different water levels? (CO2, K4)

(a) Freeze dried feed

(b) Tablet form

(c) Granular er crumble feed

(d) Paste feed

6. Bloating of the body leads to which disease? (CO3, K4)

(a) Costiasis (b) Dropsy

(c) Ich (d) Tail Rot

7. Angel fish prefer ———— Surfaces (CO2, K4)

(a) Column (b) Horizontal

(c) Vertical (d) Bottom

8. Asian Aravana are ———————— (CO2, K4)

(a) Indigenous species

(b) Live Bearer's

(c) Egg layers

(d) Egg depositers

9. What is the purpose of a quarantine tank in ornamental Aquaculture? (CO2, K4)

(a) Treatment (b) Breeding

(c) Holding (d) Display

10. What is the term for the process of transporting live fish across international borders? (CO3, K5)

(a) Importation (b) Exportation

(c) Transhipment (d) Repatriation

Part B ($5 \times 5 = 25$)

Answer **all** questions not more than 500 words each.

11. (a) Briefly explain the history of international and National status of Ornamental Aquaculture. (CO2, K3)

Or

(b) Discuss the importance of aquarium plants in maintaining a balanced aquatic ecosystem. (CO4, K3)

12. (a) List out the criteria for the site selection of Ornamental Aquaculture. (CO4, K5)

Or

(b) Write a short note on Aquarium accessories. (CO3, K5)

13. (a) Discuss the types of marine and freshwater Ornamental fish. (CO4, K3)

Or

(b) How can good management practises help reduce Stress is ornamental fish? (CO4, K3)

14. (a) How is brine shrimp commonly cultured for use as live feed in ornamental Aquaculture? (CO4, K4)

Or

(b) How does the nutrient composition of a medium affect the growth of live feed organisms ? (C02, K3)

15. (a) What are the key criteria for achieving green certification in ornamentalaquaculture? (CO3, K4)

Or

(b) Explain the current status of national and international trading of marine and freshwater Ornamental fishes. (CO3, K4)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1000 words each.

16. (a) What is the difference between capture and culture in ornamental Aquaculture? (CO3, K4)

Or

(b) How do exotic marine fish species impact the native ecosystem in ornamental fish production? (CO2, K5)

17. (a) What are the most common challenges faced in aquaponics and how can they be overcome? (CO4, K6)

Or

(b) What are the essential features for the Construction of ornamental hatchery? (CO3, K5)

18. (a) Illustrate the key factors to consider when selecting broodstock for breeding ornamental fish. (CO5, K4)

Or

(b) How do changes in water temperature affect the health of clown fish, damsel fish and cardinal fish. (CO5, K4)

19. (a) Clarify the mass scale production of live feed culture (CO2, K3)

Or

(b) What are the best methods for harvesting and Culturing phytoplankton and zooplankton for use in ornamental Aquaculture? (CO5, K3)

20. (a) Summarize the role of Government subsidies related to Ornamental fish culture. (CO2, K5)

Or

(b) Discuss the role of MPEDA which involves the regulations for export and import. (CO5, K4)

———————

R2062	Sub. Code
	547303

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

Third Semester

Fisheries Science

FISH PROCESSING TECHNOLOGY AND QUALITY ASSURANCE

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. ————————compounds, present is smoke are responsible for the bactericidal property. (CO1,K1)

   (a) PAH

   (b) Phenolic

   (c) Organic

   (d) Inorganic

2. Dehydration of fish is called (CO1,K2)

   (a) Natural drying

   (b) Artificial drying

   (c) Both (a) and (b)

   (d) None of the above

3. The fishes loses ——————during rigor mortis. (CO2,K3)

(a) Stiffness

(b) Flexibility

(c) Rancidity

(d) All of the above

4. Fishes will come under the category of ——————

(CO2,K3)

(a) High acid food

(b) Medium acid food

(c) Low acid food

(d) None of the above

5. Heating of cans can be done by (CO3,K1)

(a) In oven heat

(b) In boiling water bath

(c) Using a steamer

(d) All of the above

6. The widely used additive for canned fish is ——————

(CO3,K4)

(a) Glutamate

(b) Oil

(c) Brine

(d) All of the above

7. Which of the following is an example of crustaceans? (CO4,K1)

(a) Crabs

(b) Clams

(c) Oyster

(d) Mussels

8. Which part of fish contain more quantity of glycogen? (CO4, K5)

(a) Body muscle

(b) Kidney

(c) Liver

(d) Bone

9. MSY stands for (CO4,K3)

(a) Maximum Social Yield

(b) Minimum Social Yield

(c) Maximum Sustainable Yield

(d) None of the above

10. ———— is less expensive, simple and common fish preservation method in India (CO4,K4)

(a) Canning

(b) Freezing

(c) Sun drying

(d) All of the above

Part B (5 × 5 = 25)

Answer **all** questions not more than 500 words each.

11. (a) Explain about the biochemical changes after the fish death. (CO1,K2)

Or

(b) How do you protect the fish from microbial spoilage? (CO1,K3)

12. (a) Write brief account on different methods of chilling. (CO2,K1)

Or

(b) What are the different types of fish drying methods? (CO2,K3)

13. (a) Describe about various canned products. (CO3,K1)

Or

(b) Write a short account on quality assurance during packing. (CO3,K1)

14. (a) Give a brief account on value added fishery products. (CO4,K3)

Or

(b) Explain about various fish additives and preservatives. (CO4,K2)

15. (a) Write a brief note on HAACP. (CO5,K1)

Or

(b) What is the role of MPEDA in QA/QC? (CO5, K4)

Part C (5 × 8 = 40)

Answer **all** questions not more than 1000 words each.

16. (a) Describe about the types of fish spoilage. (CO1,K2)

Or

(b) Write an essay on fish processing methods. (CO1,K1)

17. (a) Explain about the biochemical changed occurred during fish processing. (CO2,K3)

Or

(b) Write a detailed account on problems related to canning. (CO2,K5)

18. (a) Explain about the processing and types of canned products. (CO3,K4)

Or

(b) Write an essay on fish processing methods. (CO3,K1)

19. (a) Write an essay on various fishery byproducts. (CO4,K2)

Or

(b) Describe the quality control and quality assurance of fishery products. (CO4,K3)

20. (a) Describe about good management practices in fish trading. (CO5, K4)

Or

(b) Write about the quality assurance of fishery products. (CO5,K1)

———————

R2063

Sub. Code
547304

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

Third Semester

Fisheries Science

RESEARCH METHODOLOGY IN FISHERIES

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. What is the purpose of randomization in experimental research? (CO4, K6)
   (a) To increase sample size
   (b) To reduce bias and ensure internal validity
   (c) To enhance external validity
   (d) To simplify data analysis

2. Which research design involves manipulating an independent variable to measure its effect on a dependent variable? (CO2, K6)
   (a) Survey research,
   (b) Experimental research
   (c) Case study research
   (d) Correlational research

3. What is the purpose of the monochromatic in a spectrophotometer? (CO2, K4)
   (a) To split white light into its component colors
   (b) To select a specific wavelength of light
   (c) To amplify the intensity of light
   (d) To measure the absorbance of light

4. What is the normality of a solution containing 1 mole of sulphuric acid (H_2SO_4) in 1 litter of solution? (CO3, K5)

(a) 1 N (b) 2N

(c) 0.5N (d) 4N

5. Which chromatography technique is used to separate and analyze volatile compounds? (CO3, K4)

(a) GC (b) LC

(c) TLC (d) HPLC

6. What is the purpose of the enzyme Tad polymerase in PCR? (CO5, K4)

(a) To digest DNA into smaller fragments

(b) To ligate DNA fragments together

(c) To amplify DNA sequences at high temperatures

(d) To transcribe DNA into RNA

7. Which type of microscopy is used to study the surface morphology of samples? (CO2, K6)

(a) SEM

(b) TEM

(c) Light microscopy

(d) Atomic force microscopy (AFM)

8. What is the function of the basement membrane in histology? (CO1, K2)

(a) To separate different types of tissues

(b) To provide structural support to cells

(c) To filter substances from the blood

(d) To regulate cell growth and differentiation

9. Which statistical method is commonly used to estimate fish abundance from survey data? (CO3, K4)

(a) Regression analysis

(b) Time series analysis

(c) Mark-recapture analysis

(d) Bootstrap analysis

10. What is the purpose of a catch curve in fisheries management? (CO3, K4)

(a) To estimate the total biomass of a fish population

(b) To determine the age structure of a fish population

(c) To the mortality rate of a fish population

(d) To set quotas for sustainable fishing

Part B ($5 \times 5 = 25$)

Answer **all** questions not more than 500 words each.

11. (a) Illustrate the data analysis techniques. (CO3, K4)

Or

(b) Justify the choice of research design and its suitability for the study. (CO3, K4)

12. (a) What are the limits of detection and quantitation for atomic absorption spectrophotometer. (CO2, K3)

Or

(b) Describe the main components of annuclear magnetic resonance. (CO2, K5)

13. (a) Discuss the blotting techniques. (CO3, K4)

Or

(b) Summarize the principle and use of centrifuges. (CO3, K5)

14. (a) How does a transmission electron microscope work? (CO3, K5)

Or

(b) What are the common image processing techniques used in fluorescent microscopy? (CO2, K6)

15. (a) How do you analyse catch data to estimate fish population sizes? (CO3, K6)

Or

(b) What statistical method are used to model fish growth and mortality rate? (CO5, K6)

Part C (5 × 8 = 40)

Answer **all** questions not more than 1000 words each.

16. (a) Evaluate the advantages and disadvantages of oral and visual delivering of results. (CO4, K5)

Or

(b) Briefly explain the types of research bias and their impacts on research findings. (CO5, K6)

17. (a) Write a short notes on working principle and application of PH meter? (CO5, K3)

Or

(b) How do you collect and prepare samples for normality and molarity analyses? (CO3, K4)

18. (a) Explain about molecular techniques? (CO3, K5)

Or

(b) Classify the types of electrophoresis. (CO5, K6)

19. (a) Discuss the principle and application of light microscopy. (CO4, K4)

Or

(b) Explain the principle and application of histology. (CO3, K4)

20. (a) Illustrate the relational statistics of correlation and regression. (CO4, K3)

Or

(b) What is the relationship between the binomial and Poisson distribution? (CO2, K5)

———————

R2064

Sub. Code
547508

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

Third Semester

Fisheries Science

Elective — FISH NUTRITION AND FEED TECHNOLOGY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct option.

1. ———— fish species have poor ability to digest carbohydrates. (CO1, K2)

   (a) Omnivore (b) Herbivore

   (c) Carnivore (d) All of the above

2. Fishes feeding on a variety of foods are called as ———— fishes (CO1, K1)

   (a) Monophagic (b) Stenophagic

   (c) Euryphagic (d) All of the above

3. The larva of Artemia is known as ———— (CO2, K2)

   (a) Zoea (b) Alima

   (c) Phyllosoma (d) Nauplii

4. Name the diatoms used in shrimp larval rearing (CO2, K4)

(a) Chaetoceros (b) Chlorella

(c) Daphnia (d) Spirulina

5. Which is deemed university for fishery education in India? (CO3, K2)

(a) CIFRI (b) CIFE

(c) CIFA (d) CIFT

6. The omega 3 fatty acid is (CO3, K4)

(a) palmitic acid (b) linolenic acid

(c) stearic acid (d) oleic acid

7. Carotenoids in shrimp feed are important for ———— (CO4, K5)

(a) pigmentation of the organism

(b) alkalinity maintenance

(c) antivibrio compound synthesis

(d) antibiotic resistance

8. ———— can be added in aquaculture feeds as a digestion promoting supplement. (CO4, K2)

(a) Glucosidase (b) Starch

(c) Amylase (d) Probiotic bacteria

9. What is the expansion for HACCP? (CO5, K1)

(a) Hazard Analysis Control Critical Problem

(b) Hazard Analysis Critical Control Point

(c) Hazard Analysis Critical Control Problem

(d) Hazard Analysis Control Critical Point

10. Which of the nutrient is least utilized by fish? (CO5, K2)

(a) Protein (b) Lipid

(c) Carbohydrate (d) vitamin

Part B ($5 \times 5 = 25$)

Answer **all** the questions not more than 500 words each.

11. (a) Summarize the nutritional requirements of cultivable shellfishes. (CO1, K2)

Or

(b) Explain about the role of nutrients in physiology of finfishes. (CO1, K4)

12. (a) Discuss about nitrogen balance index in fish. (CO2, K2)

Or

(b) Describe about high energy feeds in fish. (CO2, K4)

13. (a) How do you produce fish silage? (CO3, K5)

Or

(b) Explain the major issues during storage of fish feed and its raw materials. (CO3, K2)

14. (a) Outline the types of fish feed processing. (CO4, K4)

Or

(b) Describe about the good management practices in fish feed industries. (CO4, K1)

15. (a) Explain about floating and semi-floating fish feeds. (CO5, K2)

Or

(b) Write a brief account on the significance pf HACCP. (CO5, K4)

Part C (5 × 8 = 40)

Answer **all** questions not more than 1000 words each.

16. (a) Write an essay on principles of fish nutrition and terminologies. (CO1, K2)

Or

(b) Explain the nutritioinal requirements of finfish larvae, juveniles, and adults. (CO1, K1)

17. (a) Describe the energy requirements of cultivable finfishes. (CO2, K4)

Or

(b) Illustrate the mathematical modeling of ingestion of fish feed. (CO2, K2)

18. (a) Summarize importance of raw materials in fish feed formulation. (CO3, K5)

Or

(b) Explain about the national and international status of fish feed ingredients. (CO3, K4)

19. (a) Write an essay on shrimp feed formulation and production. (CO4, K2)

Or

(b) Give detailed account on status of shrimp feed processing. (CO4, K2)

20. (a) Describe about raw materials for finfish feed processing. (CO5, K1)

Or

(b) Discuss about good management practices in fish feed manufacturing and storage. (CO5, K4)

———————