R2845

Sub. Code
547201

M.Sc. DEGREE EXAMINATION, APRIL – 2025

Second Semester

Fisheries Science

FIN FISH AND SHELLFISH BIOLOGY

(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 organ in fish produces bile for fat digestion? (CO1, K2)

   (a) Stomach (b) Pancreas

   (c) Liver (d) Gallbladder

2. ———— type of fish migrates from the ocean to freshwater to spawn. (CO1, K4)

   (a) Catadromous (b) Anadromous

   (c) Amphidromous (d) Oceanodromous

3. Which shrimp species is widely cultivated in aquaculture and is known as the Pacific white shrimp? (CO2, K1)

   (a) *Penaeus indicus*

   (b) *Penaeus merguiensis*

   (c) *Litopenaeus vannamei*

   (d) *Fenneropenaeus chinensis*

4. What is the primary function of the Y-organ in prawns? (CO2, K2)

(a) Regulates pigmentation
(b) Produces molting hormones
(c) Controls reproduction
(d) Maintains osmotic balance

5. The spiny lobster is commonly found in (CO3, K5)

(a) Cold waters of the North Atlantic
(b) Tropical and subtropical waters
(c) Deep-sea environments
(d) Freshwater ecosystems

6. Which type of crab is known for its filter-feeding habit? (CO3, K2)

(a) Blue crab (b) Porcelain crab
(c) Hermit crab (d) Coconut crab

7. What is the scientific name of the green mussel? (CO4, K1)

(a) *Mytilus edulis* (b) *Perna viridis*
(c) *Crassostrea gigas* (d) *Pinctada margaritifera*

8. Which of the following is the correct sequence of stages in the life cycle of an oyster? (CO4, K2)

(a) Egg → Larva → Juvenile → Adult
(b) Egg → Trochophore → Veliger → Spat → Adult
(c) Egg → Veliger → Spat → Trochophore → Adult
(d) Egg → Juvenile → Larva → Adult

9. Which of the following is a commercially important freshwater snail? (CO4, K1)

(a) *Pomacea canaliculata*
(b) *Lymnaea stagnalis*
(c) *Viviparus viviparus*
(d) All of the above

10. Which of the following cephalopods is most commercially significant? (CO5, K1)

(a) Common Octopus

(b) Chambered Nautilus

(c) Broadclub Cuttlefish

(d) Pacific White-Sided Dolphin

Part B (5 × 5 = 25)

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

11. (a) Discuss the respiratory system of a fish. (CO1, K6)

Or

(b) Summarize the role of hormones in fish reproduction. (CO1, K2)

12. (a) Examine the economic importance of shrimp and prawn. (CO2, K4)

Or

(b) Explain the food and feeding habits of marine shrimp. (CO2, K2)

13. (a) Explain the commercial importance of crabs. (CO3, K5)

Or

(b) Define the life cycle of marine mud crab. (CO3, K1)

14. (a) Elaborate the biology of green mussel. (CO4, K6)

Or

(b) Illustrate the lifecycle of green mussel. (CO4, K4)

15. (a) Define the age and growth of *Cornu aspersum*. (CO4, K1)

Or

(b) Discuss the commercial importance of cephalopods. (CO5, K5)

Part C (5 × 8 = 40)

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

16. (a) Explain the female reproductive system of a fish. (CO1, K2)

Or

(b) Evaluate the different types of migration in fishes. (CO1, K5)

17. (a) Explain the life cycle and larval stages of prawn. (CO2, K2)

Or

(b) Discuss the role of endocrine system in reproduction of shrimp. (CO2, K6)

18. (a) Compare the morphological and feeding nature of crab and lobster. (CO3, K2)

Or

(b) Assess the role of endocrine system in reproduction of lobster. (CO3, K5)

19. (a) Elaborate the national and international status of bivalves production. (CO4, K6)

Or

(b) Evaluate the food and feeding mechanism of an oyster. (CO4, K5)

20. (a) Explain the reproductive biology of sea abalone. (CO5, K4)

Or

(b) Illustrate the lifecycle and larval stages of an octopus. (CO5, K5)

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R2846

Sub. Code
547202

M.Sc. DEGREE EXAMINATION, APRIL – 2025

Second Semester

Fisheries Science

FISHING CRAFTS AND GEARS

(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. The major gear used to exploit tunas from the Indian coastal waters is (CO1, K2)

   (a) Drift gillnets (b) Trawlers

   (c) Purse seines (d) Trolling

2. ———— type of fish migrates from the ocean to freshwater to spawn. (CO1, K4)

   (a) Handlining (b) Trawling

   (c) Fish trapping (d) Drift netting

3. Which of the following statements about Simpson's Rule is true? (CO2, K1)

   (a) It requires an odd number of intervals to apply

   (b) It uses parabolic segments to approximate the area under the curve

   (c) It can only be used for linear functions

   (d) It is more computationally expensive than the Trapezoidal Rule for the same accuracy

4. What is the primary factor influencing the design of a fishing craft? (CO2, K2)

(a) The color of the boat

(b) The type of fish being targeted

(c) The number of crew members

(d) The type of fishing gear used

5. In fishing craft design, what is meant by 'freeboard'? (CO3, K5)

(a) The length of the boat

(b) The height of the boat's sides above the waterline

(c) The width of the boat

(d) The depth of the boat's hull

6. What is the primary material used in the construction of traditional fishing crafts like canoes? (CO3, K2)

(a) Aluminum (b) Fiberglass

(c) Wood (d) Steel

7. Which of the following is a passive fishing gear? (CO4, K1)

(a) Trawl net (b) Longline

(c) Purse seine (d) Drift net

8. Which gear is commonly used to catch demersal fish? (CO4, K2)

(a) Trawl net (b) Drift net

(c) Cast net (d) Longline

9. Which of the following is a traditional fishing craft used in India? (CO4, K1)

(a) Trawler (b) Catamaran

(c) Purse seiner (d) Gill netter

10. The process of "gilling" in gill nets refers to: (CO5, K1)

(a) Catching fish by their fins

(b) Entangling fish by their gills

(c) Scooping fish into the, net

(d) Encircling fish with a net

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

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

11. (a) List the main types of fishing gears and crafts used in small-scale and industrial fisheries. (CO1, K6)

Or

(b) Identify the differences between active and passive fishing gears. (CO1, K2)

12. (a) Describe the key features of traditional fishing crafts such as catamarans, dhonis and canoes. (CO2, K4)

Or

(b) State the global and local regulations governing the use of fishing gears. (CO2, K2)

13. (a) Explain how traditional fishing crafts differ from modern ones in terms of design and efficiency. (CO3, K5)

Or

(b) Illustrate how the mesh size of a net affects the amount of bycatch in commercial fishing. (CO3, K1)

14. (a) Summarize the influence of local environmental conditions on the choice of fishing gear and craft. (CO4, K6)

Or

(b) Discuss how marine protected areas (MPAs) affect the selection of fishing crafts and gears. (CO4, K4)

15. (a) Demonstrate how the design of fishing gear can reduce bycatch and minimize environmental harm. (CO4, K1)

Or

(b) Classify trawl nets based on their design, and identify factors that influence their construction. (CO5, K5)

Part C (5 × 8 = 40)

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

16. (a) Discuss various fishing crafts and gears used as fishing techniques. (CO1, K2)

Or

(b) Compare the impact of mechanized fishing boats on sustainability with that of traditional crafts.

(CO1, K5)

17. (a) Analyze the environmental consequences of using bottom trawling as a fishing method. (CO2, K2)

Or

(b) Examine how advancements in material science improve the sustainability of fishing crafts.

(CO2, K6)

18. (a) Identify the challenges associated with introducing biodegradable fishing gears in large-scale fisheries.

(CO3, K2)

Or

(b) Evaluate the advantages and disadvantages of using gill nets for fishing. (CO3, K5)

19. (a) Assess the effectiveness of selective fishing gears in promoting sustainable fisheries. (CO4, K6)

Or

(b) Justify the role of certification programs (e.g., Marine Stewardship Council) in ensuring responsible fishing practices. (CO4, K5)

20. (a) Explain the construction of modern fishing gears and their negative impacts in the marine environments. (CO5, K4)

Or

(b) Critique the impact of ghost nets on marine ecosystems and evaluate the most effective solutions to address this issue. (CO5, K5)

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R2847

Sub. Code
547203

M.Sc. DEGREE EXAMINATION, APRIL – 2025

Second Semester

Fisheries Science

FISHERIES MANAGEMENT, REGULATIONS AND CONSERVATION

(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. The Coastal Regulation Zone (CRZ) Notification was first issued in which year? (CO1, K2)

   (a) 1981 (b) 1991

   (c) 2001 (d) 2011

2. Under the Indian Fisheries Act, 1897, which activity is prohibited? (CO1, K4)

   (a) Fishing using traditional gear

   (b) Fishing during breeding seasons

   (c) Use of artificial fish attractors

   (d) Exporting fish to other countries

3. The "Fish Seed Act, 1948" in India regulates which of the following? (CO2, K1)

(a) Breeding of marine fish species

(b) Import and export of fish seeds

(c) Quality control of fish seeds

(d) Aquatic biodiversity conservation

4. Which body oversees the enforcement of the Coastal Aquaculture Authority Act, 2005? (CO2, K2)

(a) Central Pollution Control Board

(b) Coastal Aquaculture Authority

(c) Ministry of Commerce

(d) National Biodiversity Authority

5. The aim of the "Blue Revolution" in India is to (CO3, K5)

(a) Enhance marine biodiversity conservation

(b) Double the income of fish farmers

(c) Increase fish production sustainably

(d) Develop deep-sea mining technologies

6. The National Policy on Marine Fisheries (NPMF) was released in which year? (CO3, K2)

(a) 2015 (b) 2016

(c) 2017 (d) 2018

7. Which of the following is a key feature of the National Fisheries Development Board (NFDB)? (CO4, K1)

(a) Promoting inland aquaculture

(b) Encouraging traditional fishing practices

(c) Modernizing fisheries infrastructure

(d) All of the above

8. Which government scheme focuses on the development of fisheries and aquaculture infrastructure in India? (CO4, K2)

(a) Pradhan Mantri Matsya Sampada Yojana (PMMSY)

(b) Rashtriya Krishi Vikas Yojana (RKVY)

(c) Blue Economy Vision 2025 (BEV 2025)

(d) Fisheries and Aquaculture Infrastructure Development Fund (FIDF)

9. Which of the following is prohibited under the Coastal Aquaculture Authority Act, 2005? (CO4, K1)

(a) Setting up shrimp farms

(b) Conversion of agricultural land into aquaculture ponds

(c) Breeding exotic species in aquaculture systems

(d) Aquaculture in prohibited zones

10. Which Indian state has the highest fish production? (CO5, K1)

(a) Gujarat (b) Andhra Pradesh

(c) Tamil Nadu (d) West Bengal

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

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

11. (a) Explain the concept of Maximum Sustainable Yield (MSY) and its role in fisheries management. (CO1, K1)

Or

(b) Discuss the challenges faced in managing inland and marine fisheries in India. (CO1, K6)

12. (a) Demonstrate the objectives of the Marine Fishing Regulation Act (MFRA), and how is it implemented? (CO2, K2)

Or

(b) Explain the importance of data collection in fisheries management. How do stock assessment surveys help in sustainable fishing? (CO2, K3)

13. (a) Discuss the role of co-management in fisheries governance, involving fishers and government agencies. (CO3, K5)

Or

(b) Describe the significance of the Indian Fisheries Act, 1897 in regulating fishing practices in India. (CO3, K6)

14. (a) Explain the key features of the Coastal Regulation Zone (CRZ) Notification, and how does it affect fishing activities? (CO4, K2)

Or

(b) Elaborate the Environment Protection Act, 1986 contribute to the regulation of aquaculture in India. (CO4, K6)

15. (a) Explain the role of the National Fisheries Development Board (NFDB) in modernizing the fisheries sector. (CO4, K1)

Or

(b) Discuss the regulations imposed on fishing during breeding seasons and their ecological importance. (CO5, K5)

Part C (5 × 8 = 40)

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

16. (a) Describe the importance of Marine Protected Areas (MPAs) in conserving marine biodiversity. (CO1, K2)

Or

(b) Discuss the impact of overfishing on marine ecosystems and the measures that can be taken to prevent it. (CO1, K5)

17. (a) Elaborate the climate change affect fish populations and fisheries management strategies. (CO2, K4)

Or

(b) Explain the significance of using Selective Fishing Gear to reduce by catch and its contribution to conservation. (CO2, K6)

18. (a) Explain the key features of the National Policy on Marine Fisheries (NPMF), 2017 and its impact on sustainable fisheries. (CO3, K2)

Or

(b) Discuss the international agreements like the United Nations Convention on the Law of the Sea (UNCLOS) influence fisheries management in India. (CO3, K6)

19. (a) Compare and contrast the fisheries regulations in India with global best practices. (CO4, K5)

Or

(b) Elaborate the Blue Revolution, and how does it aim to transform the fisheries sector in India. (CO4, K6)

20. (a) Discuss the role of the FAO's Code of Conduct for Responsible Fisheries (CCRF) in promoting global fisheries sustainability. (CO5, K4)

Or

(b) Explain the technology, such as GPS and satellite imagery, aid in fisheries management and conservation. (CO5, K2)

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R2848	Sub. Code
	547204

M.Sc. DEGREE EXAMINATION, APRIL – 2025

Second Semester

Fisheries Science

SHELLFISH AND FINFISH HATCHERY MANAGEMENT

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the objective questions by choosing the correct options.

1. Which country is the largest producer of shrimp hatcheries globally? (CO1, K1)

   (a) India

   (b) Thailand

   (c) Vietnam

   (d) China

2. The term for the young crab after it hatches from the egg but before it becomes a juvenile is (CO1, K2)

   (a) Megalopa

   (b) Zoea

   (c) Crabling

   (d) Nauplius

3. What is the optimal pH range for water used in shrimp hatcheries? (CO2, K1)

(a) 4.0 – 5.0 (b) 6.5 – 8.5

(c) 9.0 – 10.0 (d) 3.5 – 4.5

4. The primary purpose of shrimp quarantine is (CO2, K4)

(a) To enhance shrimp growth rates

(b) To prevent the spread of diseases

(c) To acclimate shrimp to new water conditions

(d) To promote breeding among shrimps

5. _____ material is commonly used to construct settlement substrates for mollusk spat? (CO3, K5)

(a) Plastic sheets (b) Glass panels

(c) Steel plates (d) Wooden boards

6. Which method is NOT commonly used to induce breeding in oysters? (CO3, K2)

(a) Thermal stimulation

(b) Electrical stimulation

(c) Salinity shock

(d) Chemical induction

7. The acceptable ammonia concentration for sea bass larvae is _____. (CO4, K1)

(a) Below 0.01 mg/L

(b) Below 0.1 mg/L

(c) Below 1.0 mg/L

(d) Above 5.0 mg/L

8. Which of the following hormone is commonly used to induce breeding in fish? (CO4, K1)

(a) Insulin

(b) Human chorionic gonadotropin

(c) Thyroxine

(d) Oxytocin

9. The most significant factor influencing the profitability of a shrimp hatchery is (CO4, K2)

(a) Quality and quantity of post-larvae produced

(b) Availability of brood stock

(c) Cost of packaging

(d) Type of shrimp species used

10. Which of the following crab species is commonly used for brood banking? (CO5, K1)

(a) *Callinectes sapidus*

(b) *Scylla spp.*

(c) *Paguroidea*

(d) *Paralithodes spp.*

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

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

11. (a) Explain the current status of crab hatchery in India. (CO1, K5)

Or

(b) Discuss the biology of marine shrimps. (CO1, K6)

12. (a) Evaluate briefly on the brood stock collection and transportation of fish. (CO2, K5)

Or

(b) Summarize the live feeds for fish and shrimp larvae in hatchery. (CO2, K3)

13. (a) Explain the brood stock selection strategies for green mussel. (CO3, K2)

Or

(b) Discuss the nursery maintenance of abalone. (CO3, K6)

14. (a) Outline the hatchery management strategies of mullets. (CO4, K2)

Or

(b) Compare the role of live feeds and pellet feeds sea bass larvae in hatcheries. (CO4, K4)

15. (a) Identify the capital investment cost of crab hatchery. (CO4, K3)

Or

(b) Examine the importance of fish brood banks. (CO5, K4)

Part C (5 × 8 = 40)

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

16. (a) Explain the national and international status of shrimp hatcheries. (CO1, K2)

Or

(b) Discuss the status of freshwater ornamental fish hatcheries in India. (CO1, K6)

17. (a) Demonstrate the seed production method of shrimps. (CO2, K2)

Or

(b) Elaborate the quarantine process of shrimp and its significance. (CO2, K6)

18. (a) Explain the equipment needed for the hatchery management of mussels. (CO3, K2)

Or

(b) Justify the importance of water quality management in pearl oyster hatchery. (CO3, K5)

19. (a) Demonstrate the seed production technology of cobia. (CO4, K2)

Or

(b) Recall the induced breeding process of sea bass. (CO4, K1)

20. (a) Evaluate the cost associated with setting up a fish hatchery. (CO5, K4)

Or

(b) The international trade of fish larvae is an essential aspect of the global aquaculture industry- Justify. (CO5, K2)

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R2849	Sub. Code
	547506

M.Sc. DEGREE EXAMINATION, APRIL – 2025

Second Semester

Fisheries Science

***Elective* – AQUATIC POLLUTION**

(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 are the primary causes of water pollution? (CO1, K2)

   (a) Plants (b) Animals

   (c) Human activities (d) None of these

2. Which of the following is a waterborne disease? (CO1, K4)

   (a) Typhoid (b) Cholera

   (c) Diarrhoea (d) All of the above

3. _____ is the main source of Arsenic in water. (CO2, K1)

   (a) Fertilizer (b) Flood

   (c) Industrial waste (d) Both (a) and (c)

4. The excess growth of plankton in water due to the presence of nutrients is called _____. (CO2, K2)

   (a) Algal bloom (b) Planktonic bloom

   (c) Fungal bloom (d) All of the above

5. Which one is the following pollution cause major health issues in Indians? (CO3, K1)

(a) Air pollution (b) Soil pollution

(c) Noise pollution (d) Water pollution

6. Mercury, lead, copper, cadmium, DDT etc are the example of (CO3, K2)

(a) Biodegradable pollutant

(b) Non-persistent pollutant

(c) Non-biodegradable pollutant

(d) All of the above

7. The effluents from urban areas contain (CO4, K1)

(a) Nutrients (b) Detergents

(c) Oils and Greases (d) All of the above

8. Carbon dioxide is primarily called a greenhouse gas because (CO4, K5)

(a) Traps light

(b) Traps heat

(c) Traps warm currents

(d) None of the above

9. The organisms used to gauge the quality of an ecosystem. (CO5, K2)

(a) Decomposer (b) Consumer

(c) Bioindicator (d) Predator

10. Environment Impact assessment (EIA) is done (CO5, K1)

(a) Before the project

(b) After the project

(c) During the project

(d) Any time in life cycle of project

Part B (5 × 5 = 25)

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

11. (a) Describe the different types of aquatic pollution and its sources. (CO1, K2)

Or

(b) Summarize the impacts of aquatic pollution. (CO1, K4)

12. (a) Explain about pesticide pollution and its sources in aquatic ecosystem. (CO2, K2)

Or

(b) Discus about the potential impacts of biomedical wastes. (CO2, K3)

13. (a) How do you treat the wastewater? (CO3, K4)

Or

(b) Explain the ISO standards for water quality. (CO3, K2)

14. (a) What are the waste from fish processing units? How do you treat? (CO4, K3)

Or

(b) Describe about solid waste management practices. (CO4, K1)

15. (a) Outline the importance of pollution monitoring. (CO5, K2)

Or

(b) Write a brief account on global warming and climate change. (CO5, K1)

Part C (5 × 8 = 40)

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

16. (a) Explain about the pollution problems of groundwater resources. (CO1, K2)

Or

(b) Write an essay on methods of aquatic pollution surveys. (CO1, K1)

17. (a) Demonstrate the common transport pathways of aquatic pollution. (CO2, K4)

Or

(b) Outline about the metal poisoning diseases and their toxic effects. (CO2, K2)

18. (a) Describe the characteristics of sewage and industrial effluents. (CO3, K1)

Or

(b) Summarize the importance of various water treatment methods. (CO3, K2)

19. (a) How do you remove the nitrogen and phosphorus from wastewater? (CO4, K4)

Or

(b) Describe the role of aquatic macrophytes in the treatment of wastewater. (CO4, K1)

20. (a) Explain about the criteria for selection of indicator organisms. (CO5, K5)

Or

(b) What is the role of national and international organization for Ocean monitoring? (CO5, K2)

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