

**R6079**

**Sub. Code**

**547101**

**M.Sc. DEGREE EXAMINATION, NOVEMBER – 2021**

**First Semester**

**Fisheries Science**

**INTEGRATED TAXONOMY OF FINFISH AND  
SHELLFISHES**

**(CBCS – 2021 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

1. FAO
2. Preservation
3. Authorship
4. Parthenogenesis
5. Petasma
6. True crabs
7. Siphonal canal
8. Adipose fin
9. Molecular markers
10. Phylogenetic tree

**Part B**

(5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Describe about Nomenclature.

Or

- (b) Outline the periods of classification in taxonomy.

12. (a) Write short notes on key characters of genus *Metapenaeus* with suitable examples.

Or

- (b) Write an account on key characters of genus *Portunus* with suitable examples.

13. (a) Brief about key characters of genus *Sepia* with suitable examples.

Or

- (b) Write an account on key characters of genus *Turbinella*.

14. (a) Illustrate the general characters of Channidae family.

Or

- (b) Write notes on general characters of Carcharhinidae family.

15. (a) Write a short note on RAPD.

Or

- (b) Comment on SNP.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Write a detailed account on cartilaginous fish classification with suitable examples.
  17. Write a detailed key character of genus *Scylla* with suitable examples.
  18. Discuss in detailed key characters of Loliginidae.
  19. Give an account on Cyprinidae family.
  20. Write a detailed account on mitochondrial DNA.
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**R6080**

**Sub. Code**

**547102**

**M.Sc. DEGREE EXAMINATION, NOVEMBER 2021.**

**First Semester**

**Fisheries Science**

**INLAND FISHERIES**

**(CBCS – 2021 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

All questions carry equal marks.

1. Lakes
2. Role of NGOs in inland fisheries
3. Ponds
4. Productivity level
5. Livelihood animal
6. Adaptation
7. Degradation
8. Migration
9. Water budgeting
10. Trout fish

**Part B**

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the history of inland fisheries.

Or

- (b) Discuss the inland fisheries sector.

12. (a) Describe the natural lakes with examples.

Or

- (b) Explain the present status and productivity level of fresh water fisheries.

13. (a) Elaborate on the beels fishing resources in India.

Or

- (b) Explain the impact of climate change on inland fisheries.

14. (a) Describe the direct effects of human intervention on inland fisheries in Indian rivers.

Or

- (b) Explain the migration of fish in Indian rivers.

15. (a) Describe the problems with sports fishing in India.

Or

- (b) Explain fishing tackle and its types.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

All questions carry equal marks.

16. Describe the national and international status of inland fisheries.
  17. Explain in detail the problem and management of fresh water fisheries in India.
  18. Describe the classification of fish reservoirs in detail.
  19. Discuss the diversity of exotic fish species in inland fisheries.
  20. Explain the cold water fishing resources and their diversity in India.
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**R6081**

**Sub. Code**

**547103**

**M.Sc. DEGREE EXAMINATION, NOVEMBER – 2021**

**First Semester**

**Fisheries Science**

**COASTAL AND MARINE FISHERIES**

**(CBCS – 2021 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

1. Pelagic zone
2. Continental shelf
3. Red Tide
4. Deep Sea Mission
5. PFZ
6. Ocean productivity
7. Coral bleaching
8. Bed Fisheries
9. Endangered
10. Bio invasion

**Part B**

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Write short note on Mangroves.

Or

- (b) Write short note on climate impact on marine ecosystem.

12. (a) Explain the finfish resources of brackish water

Or

- (b) Briefly discuss about ecological and Economical importance of mangrove ecosystem

13. (a) Write short note on Gulf of Mannar Biosphere reserve

Or

- (b) Fishery resources management and conservation strategies: Discuss

14. (a) Discuss IUCN listing criteria

Or

- (b) Write notes on Deep sea mission

15. (a) Differentiate between mangroves and corals

Or

- (b) Write a note on mud bank formation

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss in detail about the current status of marine capture fishery resources of India



17. Explain Illegal Unreported and Unregulated fishing
  18. Discuss in detail about active and passive fishing methods and conservation strategies for sustainable exploitation
  19. Discuss in details about Conservation and management strategies for development of marine fisheries resources, exploitation and sustainable production
  20. Write in detail about mariculture prospects in India
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**R6082**

**Sub. Code**

**547104**

**M.Sc. DEGREE EXAMINATION, NOVEMBER – 2021**

**First Semester**

**Fisheries Science**

**FINFISH AND SHELLFISH BIOLOGY**

**(CBCS – 2021 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

All questions carry equal marks.

1. Brood stock
2. Environmental stress
3. Veliger
4. Ablone
5. Define: Moulting
6. Induced breeding
7. Pearl oyster
8. Cycloid scales
9. Gonado - somatic index
10. Indian major carps

**Part B**

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain about the life history of any two of cultivable brackish water finfishes.

Or

- (b) Explain briefly reproductive biology of Milkfish

12. (a) Write short account on Physiology of any two freshwater fishes.

Or

- (b) How does moulting play a vital role in culture practices? Discuss briefly.

13. (a) Briefly explain commercially importance of lobsters

Or

- (b) Describe the different food and feeding habits of shellfishes

14. (a) Write notes on age and growth of *Meretrix meretrix* and *Pinctada* sp.

Or

- (b) Briefly explain life cycle of *Perna viridis*

15. (a) Describe the reproduction biology of freshwater snails

Or

- (b) Give detail of ecological and commercial importance of gastropods.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Write an essay on food and feeding habits of any four marine fishes
  17. Elaborate the role of hormones in the reproduction shrimps and prawns
  18. Explain the different food and feeding of crabs and lobsters
  19. Give details account on the present status of clam and oyster culture in India
  20. Describe the Cephalopods food and feeding and life cycle history
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**R6083**

**Sub. Code**

**547105**

**M.Sc. DEGREE EXAMINATION, NOVEMBER – 2021**

**First Semester**

**Fisheries Science**

**AQUATIC ECOLOGY AND BIODIVERSITY**

**(CBCS – 2021 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

All questions carry equal marks.

1. Ecosystem
2. Ecotone
3. Define: Estuaries
4. Atolls
5. Neap tides
6. Oxygen minimum zone
7. Define: Chlorinity.
8. Carbon credit
9. Ozone depletion
10. Species evenness.

**Part B**

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

All questions carry equal marks.

11. (a) Write a short note on the *r* and *k* selection.

Or

- (b) Briefly discuss about the ecological concepts.

12. (a) Briefly explain about different types of biotic features of marine ecosystem.

Or

- (b) Write short note on ecological importance of mangrove ecosystem.

13. (a) Discuss briefly different types of tides in the marine environment.

Or

- (b) Comment on the carbon dioxide cycle in the marine environment.

14. (a) Briefly explain about marine sedimentary cycles in tropics.

Or

- (b) Write briefly about global warming and its effects in the ocean.

15. (a) Discuss about types of biodiversity.

Or

- (b) Explain about the economic appraisal of biodiversity.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Elaborate the different components and ecological importance in marine environment.
  17. Discuss about coral reef ecosystem and its ecological importance.
  18. Give a detailed account on the physical and chemical parameters in the ocean.
  19. Explain the different pollution control and management in marine environment.
  20. Describe the factors influencing aquatic biodiversity and concepts of diversity.
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**R6084**

**Sub. Code**

**547501**

**M.Sc. DEGREE EXAMINATION, NOVEMBER – 2021**

**First Semester**

**Fisheries Science**

**FISH GENETICS**

**(CBCS – 2021 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** the questions.

1. Transgenesis.
2. Androgenesis.
3. Paul Hebert.
4. Lac Operon.
5. Triploid hybrid.
6. Transgenic fish.
7. Fish gene bank.
8. Diploidization.
9. Nucleotide diversity.
10. Phylogenetic analysis.



**Part B**

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) What are the scope of genetics in fisheries and aquaculture?

Or

- (b) Explain about sex-linked-inheritance.

12. (a) Write a brief note on gene expression in prokaryotes.

Or

- (b) Explain about DNA mutation and recombination.

13. (a) Write a brief note on interspecific hybridization.

Or

- (b) What are the advantages and disadvantages in selective-breeding and cross-breeding?

14. (a) Write about the importance of conservation of germplasm.

Or

- (b) Explain the role of chromosome manipulation in aquaculture.

15. (a) Brief note on Hardy-Weinberg law and its significance.

Or

- (b) Explain about the consequences of random genetic drift.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Write an essay on Mendelian principles and contributions.
  17. Write a detailed account on DNA barcoding of biological resources.
  18. Describe in detailed account on cryopreservation and its advantages and applications.
  19. Explain about the collection and preservation of fish genetic resources.
  20. What are the different markers used in genetic assessment? Explain in detail with illustration.
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**R6085**

**Sub. Code**

**547301**

**M.Sc. DEGREE EXAMINATION, NOVEMBER – 2021**

**Third Semester**

**Fisheries Sciences**

**RESEARCH METHODOLOGY IN FISHERIES**

**(CBCS – 2019 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** the questions.

1. Gears
2. Bottom trawling
3. pH meter
4. Infra-red rays
5. HPLC
6. Electrophoresis
7. Research literature
8. Analysis
9. Pre-proposal
10. Product distribution

**Part B**

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Illustrate on preservation of netting and accessories.

Or

- (b) Give a note on selection of gears for fishing.

12. (a) Write about fluorescent microscope in brief.

Or

- (b) Write a note on oxygen and temperature probes.

13. (a) Mention the different electrophoretic techniques.

Or

- (b) Write a note on histological studies.

14. (a) Explain preparation of transparencies in brief.

Or

- (b) What are research papers? Explain its importance in research.

15. (a) Explain origin and goals in project planning.

Or

- (b) Write note on funding and its significance in project planning.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Illustrate modern commercial fishing methods.
  17. Give a detailed note on different microscopes and its applications.
  18. Explain different chromatographic techniques in detail.
  19. Make an account on various factors involved in principle of literatures.
  20. Give a detail note on pre-proposal in research area.
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**R6086**

**Sub. Code**

**547302**

**M.Sc. DEGREE EXAMINATION, NOVEMBER – 2021**

**Third Semester**

**Fisheries Science**

**FISH HARVEST AND POST-HARVEST MANAGEMENT**

**(CBCS – 2019 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** the questions.

1. Shellfishes
2. Trawler
3. Post-mortem
4. Salmonella
5. BMP
6. IQF
7. Smoking of fishes
8. Dry fish
9. Fermentations
10. Mud crab

**Part B**

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Status of fin fish resources of Indian marine waters.

Or

- (b) Write note on grading of harvested marine fin and shell fishes.

12. (a) Write note on biochemical composition of fin and shell fishes.

Or

- (b) Describe post-mortem changes of fin and shell fishes.

13. (a) Describe HACCP in seafood processing.

Or

- (b) Write short note on chilling of fresh water shell and fin fishes.

14. (a) Explain the process of drying and smoking of marine fin fishes with examples.

Or

- (b) Note on mechanisms of sea food processing through irradiation.

15. (a) Describe fresh water live fish transportation and its domestic market.

Or

- (b) What are all the MPEDA standards for chilled fin and shell fishes.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Detailed note on gears and crafts used to harvest fin and shell fishes from fresh, brackish and marine waters
  17. Explain quality assessment and sensory evaluation of harvested fishes from sea
  18. Write an essay on any five sea food pre-processing methods
  19. Essay on value added fish and fishery products in India and abroad
  20. Write an essay on GMP during transportations of harvested fishes
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**R6087**

**Sub. Code**

**547303**

**M.Sc. DEGREE EXAMINATION, NOVEMBER – 2021**

**Third Semester**

**Fisheries Science**

**FISH HATCHERY AND FARM DESIGN AND  
CONSTRUCTION**

**(CBCS – 2019 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** the questions.

1. Soil suitability for a farm
2. Topography
3. Nursery
4. Aeration
5. Chinese Hatchery
6. RAS
7. Pen
8. Cage
9. Pokkali fields of Kerala
10. Aquaponics

**Part B**

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Write note on criteria for the selection of suitable site for the establishment of marine hatchery.

Or

- (b) Explain social and economical factors to be considered while establishing the aquaculture farms.

12. (a) Write note on construction of small scale fin fish hatchery.

Or

- (b) Explain different types of aerators in the market.

13. (a) Describe nursery systems and its components.

Or

- (b) What is Dyke? Briefly explain peripheral dyke and secondary dyke.

14. (a) Write note on site selection for construction of cages and pens in seas.

Or

- (b) Explain different types of cages and its specific purpose.

15. (a) Write note on site selection in integrated fish farming complex.

Or

- (b) Explain layout for Recirculatory Aquaculture Systems.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Detailed note on site selection for a fresh water farm establishment.
  17. Explain large scale hatchery design for marine shell and fin fishes.
  18. Write an essay on construction of small and large scale earthen ponds.
  19. Briefly explain construction of a pen and its components.
  20. Write an essay on design of a grow-out farm layout for coastal aquaculture purposes .
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**R6088**

**Sub. Code**

**547304**

**M.Sc. DEGREE EXAMINATION, NOVEMBER – 2021**

**Third Semester**

**Fisheries Science**

**INTEGRATED FISH FARMING SYSTEMS**

**(CBCS – 2019 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** the questions.

All questions carry equal marks.

1. Sea ranching
2. Monoculture
3. Pokkali
4. Media Bed Hydroponics
5. Piggery
6. Small ruminants
7. Poultry integration
8. Droppings
9. Sewage Fed-Fish Culture
10. *Pangasius* sp.

**Part B**

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

All questions carry equal marks.

11. (a) Give an account on running water aquaculture.

Or

- (b) Discuss the method of freshwater fish polyculture.

12. (a) Brief the international status of aquaponics.

Or

- (b) Explain the following:

- (i) NFT Hydroponics
- (ii) DWC Hydroponics

13. (a) Brief on the current status of fish–goat integrated farming.

Or

- (b) Write note on the significance of fish-cattle integrated farming.

14. (a) Discuss the socio-economic importance of fish-poultry integrated farming.

Or

- (b) Narrate the current status of fish-poultry farming in India.

15. (a) Explain the environmental and economic value of wastewater aquaculture.

Or

- (b) Describe the current scenario of wastewater fish culture in India.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

All question carry equal marks.

16. Elaborate the method of composite fish culture
17. Describe the working principle of saltwater aquaponics system
18. Explain the method of culture of fish and pig in integrated system
19. Descript the steps involving in integrated chicken-fish farming
20. Narrate the method of culture of Tilapia in domestic wastewater

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**R6089**

**Sub. Code**

**547505**

**M.Sc. DEGREE EXAMINATION, NOVEMBER – 2021**

**Third Semester**

**Fisheries Science**

**FISHERY ECONOMICS AND MARKETING**

**(CBCS – 2019 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

All questions carry equal marks.

1. Bio economic
2. Economic growth
3. Fishery subsidies
4. Pricing and optima
5. Extension education
6. Role of MPEDA
7. Semi intensive
8. Cobb-Douglas
9. PRA
10. WTO.

**Part B**

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

All questions carry equal marks.

11. (a) Write note on Bio economic analysis of fisheries.

Or

- (b) Explain about the role of market structure in fish and fisheries.

12. (a) Explain the Positive externalities.

Or

- (b) Briefly explain about economic incentives for fishery sector.

13. (a) Write about production principles for fishery economics.

Or

- (b) Give detail about the law comparative advantage for aquaculture product.

14. (a) What is the role of marketing in Aquaculture sector?

Or

- (b) Public sector extension in shrimp farming.

15. (a) How will you study the socioeconomic variables?

Or

- (b) Role of sociology in the process of fisheries development.



**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Give detailed account on property rights in fisheries exploitation.
  17. Discuss about the fishery resource management policies.
  18. What are the Schemes of NABARD and NFDPI for fisheries sector?
  19. Describe the fisheries marketing organizations in India.
  20. How will you study the socio economic problem thorough PRA and RRA.
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