

Chattogram Veterinary and Animal Sciences University, Chattogram
Faculty of Fisheries
 B. Sc. Fisheries (Hons.) Year-02, Semester-02, Final Examination, 2023
 Course No: **0831CZM202 (T)**, Course Title: **Coastal Zone Management (Theory)**
 Total Marks: 70, Time: 3 hours

*Answer any **5 (five)** questions from each section. Figures in the right margin indicate full marks. Use separate answer scripts for each section.*

Section A

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|----|---|---|-----------|
| 1. | a) | What do you mean by coastal zone management (CZM)? Why is it important? | 3.0 |
| | b) | Describe the different zones of the coastal area in Bangladesh. | 4.0 |
| 2. | a) | How does climate change affect the coastal zone of Bangladesh? | 3.0 |
| | b) | Describe the common environmental challenges that are faced during coastal zone management of Bangladesh. | 4.0 |
| 3. | a) | How does coastal zone management contribute to sustainable economic development? | 3.0 |
| | b) | Discuss how goods and services from mangroves create ecologically sustainable shore management. | 4.0 |
| 4. | a) | What are the challenges and opportunities for sustainable coastal development in the 21st century? | 3.0 |
| | b) | How do changes in one part of a coastal ecosystem, such as a decline in a keystone species, affect the overall health and resilience of the ecosystem? Explain with an appropriate example. | 4.0 |
| 5. | a) | Enumerate the advantages and disadvantages of urban and industrial development in coastal zones. | 3.0 |
| | b) | Summarize the challenges and opportunities of coastal agriculture and aquaculture. | 4.0 |
| 6. | a) | Mention the key principles of integrated coastal zone management (ICZM), and how they can be applied to address the complex challenges in the communities of the coastal zones. | 4.0 |
| | b) | How can coastal zone management contribute to achieving the Sustainable Development Goals (SDG) through the Sustainable Livelihood Approach (SLA) | 3.0 |
| 7. | Write short notes on any two of the following | | 3.5×2 7.0 |
| | a) | CBCRM | |
| | b) | Land-sea interaction | |
| | c) | Coastal vulnerabilities | |

Section B

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|-----|---|--|------------|
| 8. | a) | Mention the objectives and benefits of the coastal zone management. | 3.0 |
| | b) | Describe the management practices for involving diverse stakeholders in the development and implementation of coastal management plans. | 4.0 |
| 9. | a) | Mention the major environmental and health issues in ship recycling along with their mitigation strategies in the context of Bangladesh. | 3.0 |
| | b) | Devise how maritime transportation and coastal tourism can be developed sustainably in coastal and marine regions of Bangladesh. | 4.0 |
| 10. | a) | What are the common causes of resource use conflicts among different stakeholders? | 3.0 |
| | b) | Discuss how horizontal and vertical integration can enhance coastal zone management outcomes among different development sectors. | 4.0 |
| 11. | a) | How long-term strategic planning can be integrated into short-term decision-making to ensure the sustainability of coastal zone management. | 3.0 |
| | b) | Discuss the socio-economic impacts of poorly managed coastal zones in the context of Bangladesh. | 4.0 |
| 12. | a) | How can the ICZM planning cycle be used to ensure the continuous improvement of sustainable coastal management? | 3.0 |
| | b) | How can remote sensing and GIS technologies be used to monitor coastal changes, environmental impact assessment, and spatial planning in coastal zone management? | 4.0 |
| 13. | a) | Mention the advantages of using eco-engineering solutions in ICZM compared to traditional shore protection methods. | 3.0 |
| | b) | How can the integration of administrative, social, and technical tools create a holistic approach to ICZM? What are the challenges developed countries face in implementing these tools effectively? | 4.0 |
| 14. | Write short notes on any two of the following | | 3.5×2= 7.0 |
| | a) | Coastal tourism | |
| | b) | Problem tree analysis | |
| | c) | Blue economy | |

Chattogram Veterinary and Animal Sciences University, Chattogram
Faculty of Fisheries

B.Sc. Fisheries (Hons.) Year - 2 Semester -2 (June -December), Final Examination, 2023

Course No: 0831FNU202T, Course Title: Fish Nutrition (Theory)

Full Marks: 70; Time: 3 hours

*Answer **any 5 (five)** questions from each section. Figures in the right margin indicate full marks. Use separate answer script for each section.*

Section-A

1.	a. Define fish nutrition. Write down the principles of fish nutrition. b. Describe the role of different nutrients in aquaculture practices.	2 5
2.	a. What is the mechanism of absorption of nutrients in fish? b. List the digestive fluids and enzymes secreted in teleost fish with their sites and functions.	4 3
3.	a. Describe energy utilization in fish. b. Show with a schematic representation of the fate of dietary energy in salmonid fish.	4 3
4.	a. What do you mean by nutritional pathology? b. Describe the nutritional disorders/pathological signs in fish due to protein/amino acid deficiencies.	3 4
5.	a. What you mean by digestion? b. Describe the steps and enzymes involved in protein digestion of fish.	2 5
6.	a. Write about the special nutrients required for brood stock nutrition prior to spawning. b. How would you evaluate the protein quality of a feed?	4 3
7.	Write short notes on any 2 (two) of the following: i) Specific dynamic action; ii) Energy portioning model and iii) Evaluation of protein quality	3.5x2=7
<u>Section B</u>		
8.	a. Describe the functions of protein in fish nutrition. b. Explain the protein metabolism process in fish body.	3 4
9.	a. Summarize the importance of amino acid profiles in fish nutrition. b. What are the methods used to determine whether an amino acid is essential or non-essential for the fishes.	3 4
10.	a. What are the factors affecting fatty acid composition of fish? b. Explain in details the metabolism of fatty acid in fish body.	2 5
11.	a. Write down the general function of minerals. b. Explain in details the structure, biological function, deficiency syndrome and dietary sources of pyridoxine and pantothenic acid.	2 5
12.	Write down the important factors which are responsible for the quantitative dietary vitamin requirements in fish body.	7
13.	a. Summarize the mineral requirements for fish and shrimp. b. Write down the biochemical function, dietary source and deficiency syndromes in fish of copper.	2 3 3 4
14.	Write short notes on any 2 (two) of the following: i) Functions of lipid; ii) Biological function of biotin and iii) Protein requirements of brood stock	3.5x2=7

Chattogram Veterinary and Animal Sciences University, Chattogram
Faculty of Fisheries
B.Sc. Fisheries (Hons.) 2nd Year, 2nd Semester- 2023; Final Examination, 2023
Course Code: Rural Sociology Course Title: RSO (Theory)
Full marks: 70; Time: 3 hours

Answer any 05 (five) questions from each section. Figures in the right margin indicate full marks. Use separate answer script for each section.

Section-A

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|----|----|---|-----|
| 1. | a) | Define rural sociology? | 2.0 |
| | b) | Discuss the relationship between rural sociology and ^{Fisheries} veterinary sciences. | 5.0 |
| 2. | a) | What is juvenile delinquency? | 2.0 |
| | b) | Analyze the juvenile delinquency from Bangladesh context. | 5.0 |
| 3. | a) | Explain the differences between social development and social progress. | 3.0 |
| | b) | 'Geographical factors influence our social life'-explain the statement in context of Bangladesh | 4.0 |
| 4. | a) | Discuss the physiology of human behaviour. | 3.0 |
| | b) | State and describe the factors of human development. | 4.0 |
| 5. | a) | What is social interaction? | 3.0 |
| | b) | Briefly discuss about various types of human interaction in society. | 4.0 |
| 6. | a) | Define social change. | 2.0 |
| | b) | Enumerate the various factors that cause the social change. | 5.0 |
| 7. | a) | Define social control. | 2.0 |
| | b) | Write the types of social control. | 5.0 |

Section B

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|-----|----|---|---------|
| 8. | a) | Define and state the objectives of integrated farming system. | 3.0 |
| | b) | Explain the various kinds of resources. | 4.0 |
| 9. | a) | Why do people migrate? | 2.0 |
| | b) | Explain the causes and effects of migration? | 5.0 |
| 10. | a) | What are the objectives of sustainable livelihood? | 3.0 |
| | b) | Distinguish between structured and non-structured questionnaire. | 4.0 |
| 11. | a) | Briefly discuss the steps for conducting a social research. | 3.5 |
| | b) | Describe the types of social methodology. | 3.5 |
| 12. | a) | What is culture? | 2.0 |
| | b) | Discuss the concept of cultural lag citing with example from the context of Bangladesh. | 5.0 |
| 13. | a) | Write short notes (any two) | 3.5.x2= |
| | b) | a) Personality b) Socialization C) Biodiversity. | 7.0 |

Chattogram Veterinary and Animal Sciences University, Chattogram
Faculty of Fisheries

B.Sc. Fisheries (Hons.) Year -02, Semester -02 (July-December), Final Examination, 2023

Course No: 0831FPA202T, Course Title: Fish Parasitology (Theory)

Full Marks: 70; Time: 3 hours

*Answer **any 5 (five)** questions from each section. Figures in the right margin indicate full marks. Use separate answer script for each section.*

Section-A

1. a. What do you know about the concept and scope of "Fish Parasitology"? 2
b. Why is the knowledge of fish parasitology important for aquaculture? 5
2. a. Distinguish between protozoan and metazoan fish parasites. 2
b. Enlist some important features of Protozoan fish parasites with examples. 5
3. a. Categorize fish parasites depending on the spatial relationship between the parasites and their host 3
b. Write down the major differences between facultative and pseudoparasitism. 2
c. How can host factors influence the host-parasite interaction in fish? 2
4. a. Write down the life cycle of "yellow grub" in fish. 5
b. Which stage of life cycle of this parasite can potentially infect the fish host? 2
5. a. What is the necessity of symbiotic relationship between the symbiont and host? 3
b. Describe the following categories of symbiotic association: i) commensalism, 4
and ii) parasymbiosis.
6. a. What is parasitic infestation in fish? 1
b. Briefly describe the ecology of different fish parasites. 6
7. Write short notes on **any 2 (two)** of the following: 3.5x2=7
a. Hyperparasitism, b. Copepod worms, and c. Gill fluke

Section B

8. a. What is infective stage of any fish parasite? 2
b. Illustrate the life cycle of *Ichthyophthirius multifiliis* with the infective stage in fish. 5
9. a. What is the role of attachment organs in the life cycle fish parasite? 2
b. Enlist some commonly observed attachment organs in the major fish parasites with appropriate examples. 5
10. a. Differentiate between acute and chronic infection. 2
b. Enumerate the mechanism involved in the infection and disease state caused by parasites in fish 5
11. a. What is the public health concern associated with fish and fish parasites? 2
b. Briefly describe about fish born Nematodiasis in human. 5
12. a. What is bass tape worm? 2
b. Describe the life cycle of bass tape worm. 5
13. a. What do you know about the life-cycle dependency of fish parasites? 4
b. Give some examples of parasites found as free living to parasitic in fish. 2
c. In what type of host the sexual maturation of fish parasites occurs? 1
14. Write short notes on **any 2 (two)** of the following: 3.5x2=7
a. Spiny-headed worm, b. Vector, and c. Anchor worm

Chattogram Veterinary and Animal Sciences University, Chattogram
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B.Sc. Fisheries (Hons.) Year-02, Semester-02; Final Examination, 2023

Course Code: 0831ABC202T, Course Title: Aquatic Biodiversity and Conservation(Theory)

Full marks: 70 Time: 3 hours

Answer any 05 (five) questions from each section. Figures in the right margin indicate full marks. Use separate answer script for each section.

Section-A

1. a) Define ecosystem biodiversity with an example. 2
b) Write down the economic and ecological importance of aquatic biodiversity. 5
2. a) Write down the significance of the estimation of Biodiversity. 2
b) Describe "Shannon-Wiener Index" as a method of biodiversity assessment. 3
c) Differentiate between "Simpson Index" and "Shannon-Wiener Index". 2
3. a) Write down the threats for the haors of Bangladesh. 3
b) Discuss the potential consequences of climate change on haor ecosystem biodiversity. 4
4. a) Define "Marine Protected Areas (MPAs)". 2
b) Elucidate the importance and contribution of Marine Protected Areas (MPAs) to ocean conservation. 3
c) List down the important MPAs of Bangladesh. 2
5. a) Discuss the world's largest mangrove forest biodiversity with relevant data. 3
b) Analyze the potential of eco-tourism as a sustainable solution for protecting the aquatic biodiversity of St. Martin Island. 4
6. a) Enlist the fish conservation acts of Bangladesh. 2
b) Describe how plastic pollution affects different levels of the Bay of Bengal's biodiversity and propose mitigation measures to address the specific threats posed to these organisms and their habitats. 5
7. a) Differentiate between exotic species and invasive species. 3
b) Why invasive alien species is considered a potential threat to biodiversity? 4

Section B

8. a) Define keystone ecosystems and species with examples. 2
b) Propose a conservation plan for a vulnerable fish species, incorporating ecological and biological principles. 5
9. a) Write down the scientific names of five important SIS of Bangladesh. 2
b) Describe the threats of SIS in natural habitat suggesting the mitigating measures. 5
10. a) Explain the concept of 'ranching' and its potential role in fisheries conservation. 3
b) Compare and contrast in-situ and ex-situ conservation methods, highlighting their advantages and disadvantages. 4
11. a) How could a live gene bank be used as a tool for the conservation of a threatened fish species? 3
b) What specific conservation strategies would you adopt to protect the fish biodiversity of Kaptai Lake? 4
12. a) Differentiate among haor, baor, and beel. 3
b) Enlist the major man-made activities responsible for habitat alteration and loss of inland water bodies in Bangladesh. 4
13. a) How do you calculate species richness? - Explain with a mathematical example. 3
b) Can you implement an ecosystem-based management plan for Dibir Haor, which you visited recently? If so, what key steps would you implement? 4
14. Write down short notes on any 02 (TWO) of the following: 3.5x 2= 7
i) World Wetland Day; ii) IUCN Red list & iii) Cryopreservation

Chattogram Veterinary and Animal Sciences University, Chattogram
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B. Sc. Fisheries (Hons.) Year -02, Semester-02, Final Examination' 2023

Course code and Title: **0831RBE202T, Reproductive Biology and Embryology (Theory)**

Total Marks: 70

Time: 3 hours

Answer any 05 (five) questions from each section. Illustrate your answer wherever necessary. Figures in the right margin indicate full mark. Use separate answer script for each section.

Section-A

1. a) What do you understand by reproduction, reproductive biology and embryology? 2
b) Enlist some features of sexual reproduction in fish. 2
c) Discuss the application of knowledge of embryology in fisheries science. 3
2. a) Differentiate between gonochorism and hermaphroditism. 2
b) Summarize your knowledge on secondary sex characteristics observed in different groups of fish. 5
3. a) What do you understand by gymnovary and cystovary? 2
b) Draw the structure of a mature egg. 2
c) Distinguish between spermatogenesis and oogenesis. 3
4. a) Explain the term puberty and precocity. 2
b) Enlist the hormones involved in the regulation of puberty in fish. 2
c) How you can manipulate puberty for aquaculture species? 3
5. a) What do you mean by fertilization? 1
b) What are the different types of fertilization observed in animal groups? 3
c) Enlist the post-fertilization changes noticed in fish eggs. 3
6. a) What do you mean by organogenesis and metamorphosis? 2
b) Distinguish between embryo and larvae. 2
c) What are the fate of germ layers at gastrulation? 3
7. Write short note on **any 02 (two)** of the following: 3.5 × 2 = 7
a) Reproductive cycle, b) Micropyle, c) Polyspermy, and d) X linked gene

Section-B

8. a) Differentiate between sexual and asexual process of reproduction. 3
b) What do you understand by alteration of generation? Explain the alteration of generation mode of reproduction using appropriate example. 4
9. a) What is pheromone? 1
b) How pheromones help to interacts among different members in a population? 2
c) Briefly describe the breeding behavior of three-spine stickleback. 4
10. a) What do you know about sperm motility characters? 2
b) Explain the process of hormonal regulation of oocyte maturation. 5
11. a) What is parental care and social parasitism? 2
b) What are the different types of nests build by the fishes for caring of the young? Describe each of them with labelling. 5
12. a) Explain the following term: cleavage, morula, gastrula, and epiboly. 4
b) Draw a diagram of zebrafish fate mapping. 3
13. a) What do you understand by sex determination and differentiation? 2
b) Discuss different sex determination system found in fishes with example. 5
14. Write short note on **any 02 (two)** of the following: 3.5 × 2 = 7
a) Seminiferous tubules, b) Courtship, c) Gamete viability, and d) Parthenogenesis

Chattogram Veterinary and Animal Sciences University, Chattogram
Faculty of Fisheries
B. Sc. Fisheries (Hons.) Year -02, Semester-02, Final 2023
Course No: **083GOC-202T**, Course Title: **Geological Oceanography (Theory)**
Total Marks: 35, Time: 2 hrs.

*Answer any **03 (three)** questions from each section. **Question 9 in section B is Compulsory in one of the three questions.**
Figures in the right margin indicate full marks. Use a separate answer script for each section.*

Section A

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|----|--|-----|
| 1. | a) How do geological layers of the earth vary in characteristics and composition? | 3.0 |
| | b) Explain the mechanisms of ocean floor spreading and trench formation. | 3.0 |
| 2. | a) Briefly describe the physiographic features of ocean floor topography. | 3.0 |
| | b) Illustrate rocky coastal landform patterns. | 3.0 |
| 3. | a) What is marine sediment and marine sedimentation? | 2.0 |
| | b) Describe various types of sediment on the ocean floor. | 4.0 |
| 4. | a) Enlist the major events that occurred from the Big Bang to supercontinent formation on the earth. | 3.0 |
| | b) Evaluate the acceptability of Continental Drift Theory. | 3.0 |
| 5. | a) Illustrate the major timelines of the earth with important phenomena. | 3.0 |
| | b) Write down the major geographical features of the world's oceans. | 3.0 |

Section B

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|----|--|-----|
| 6. | a) Differentiate between continental crust and oceanic crust. | 2.0 |
| | b) Write down the mechanisms of volcanic arc and island arc formation. | 4.0 |
| 7. | a) Write down the sources and transportation mechanisms of sediment. | 3.0 |
| | b) How do the distributions of marine sediment vary with location and depth? | 3.0 |
| 8. | a) What is a mid-ocean ridge? | 1.0 |
| | b) Briefly discuss a cross-sectional diagram of a ridge showing different zones. | 5.0 |
| 9. | a) Sketch and characterize the maritime area that a coastal country can claim. | 3.0 |
| | b) How were Bangladesh's baseline and maritime boundaries determined? | 2.0 |

Or

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|----|--|-----|
| a) | What is a Bengal fan? | 1.0 |
| b) | Write about the trench and turbidity current of the BoB. | 4.0 |

Chattogram Veterinary and Animal Sciences University, Chattogram
Faculty of Fisheries
B. Sc. Fisheries (Hons.) Year-02, Semester-02, Final Examination' 2023
Course Code: 0831MFC202T, Course Title: Marine Food Chemistry (Theory)
Total Marks: 70, Time: 3 hours

*Answer any **05 (five)** questions from each section. Use separate answer script for each section. Figures in the right margin indicate full mark.*

Section-A

1. a) Classify marine food organisms and giving at least two common, local and scientific names from each class. 3
- b) Identify the common seaweed species found along the Bangladesh coast. Do you think it is viable to cultivate seaweed in Bangladesh? 4
2. a) Write down the role of omega-3 and omega-6 EFAs for human health. 4
- b) Illustrate the mechanisms of lipid metabolism in human health. 3
3. a) "Hypervitaminosis takes place in case of fat soluble vitamins rather than water soluble vitamins"- justify the statement. 2
- b) What are the major available forms of vitamin D? Mention the major deficiency syndromes caused by vitamin E and K. 2
- c) Differentiate between fat soluble and water soluble vitamins. 3
4. a) Differentiate between food borne infection and intoxication. 3
- b) What are the carotenoids? Write the name of carotenoids found in fish, crustaceans, mammals and mollusks. 4
5. a) Prepare a list of the macro- and micro-elements in fish and shellfish. 3
- b) Briefly discuss the sources, functions and daily requirements of the following elements: Ca, P and Mg. 4
6. a) What is bioaccumulation? Diagrammatically show how toxins and harmful chemicals enter into the food chain. 3
- b) Write down some practical means of detoxifying shellfish poison. Discuss briefly the toxin name, source organisms, symptoms and prevention of CFP and NSP. 4
7. a) Discuss in brief the health implications of CLA. 3
- b) Write down the safety rules for CLA supplements. 2
- c) What is rancidity of lipid? How would you prevent lipid oxidation in fish? 2

Section-B

8. a) "Chemical composition of fish is very important to a fish processor"- justify. 2
- b) Why do you consider fish and shellfish as high quality food? 2
- c) Give a brief description of main groups of marine food organisms available in Bangladesh. 3
9. a) What is flavor? Write down the name of compounds responsible for the flavor development in fish and fishery products. 4
- b) Explain the role of NPN to the taste and spoilage of fish. 3
10. a) Classify the fish muscle protein on the basis of solubility. 3
- b) Why fish is considered more perishable than any other food stuffs? Draw and label a typical fish skeletal muscle. 4
11. a) Mention the physical and chemical properties of amino acid. 2
- b) Write down the mechanism of gelation of fish muscle protein. 3
- c) Write down the changes of protein during processing and preservation of fish and shellfish. 2
12. a) Discuss the present status of mollusks in Bangladesh. 3
- b) What is histamin poisoning? How does it take place? How can you prevent histamin poisoning? 4
13. a) Mention the names of different enzymes and their functions in fish body. 2
- b) Describe the role of thiamin and riboflavin on human health. 2
- c) Briefly describe the role of volatile compounds for producing off-flavor in fish and seafood. 3
14. Write short notes on any **2 (two)** of the followings: 3.5×2=7
- a) Krill; b) Cod liver oil; and c) TTX