

Chittagong Veterinary and Animal Sciences University, Chittagong

Faculty of Fisheries

B. Sc. Fisheries (Hons.) Year -03 Semester-02, Final Examination' 2018

Course No: MFM-302 (T), Course Title: Marine Fisheries Management (Theory)

Total Marks: 70, Time: 3 hours

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

Section-A

1. a) How the extent and nature of Marine Fisheries Management differ from Inland Fisheries Management? 2.0
b) Differentiate between MSY and MEY 2.0
c) Discuss how you can apply the knowledge of Marine Fisheries Management in your future career for the management of fisheries resources of the Bay of Bengal. 3.0
2. a) What do you understand by sustainability in fisheries system? 2.0
b) Write down the steps involved in assessment of sustainability in fisheries 2.0
c) Briefly discuss the fundamental components for fisheries sustainability. 3.0
3. a) Discuss the impact of bottom trawl on marine fisheries. 3.0
b) Explain the role of long line fishing for sustainable fisheries management. 2.0
c) Why square meshed nets are preferred for fishing? 2.0
4. a) Name different types of methods used in estimation of fish abundance. 1.0
b) Compare and contrast between swept area method and mark recapture method of stock abundance estimation. 4.0
c) Draw the special features of harvest-type sea ranching program. 2.0
5. a) What do you understand by closed season studies? 2.0
b) Compute and explain the equation of gear selectivity. 3.0
c) Discuss about the different types of parameter used in gear selectivity. 2.0
6. a) What are TAC and CBFM? 2.0
b) Discuss the major issues and challenges of implementing input control and output control of artisanal fisheries of the Bay of Bengal in Bangladesh. 5.0
7. Write short notes on any Two (02) of the following 3.5×2
a) Modern fishing techniques b) MCS c) Fisheries Enhancement Programs

Section-B

8. a) Compare between active gear and passive gear. 2.0
b) "ESBN and MSBN are destructive fishing gear and major issues of biodiversity loss of the marine fisheries management of Bangladesh"—Explain the statement. 2.0
c) Evaluate the best auction system practices in the fish market for marine fishers of Bangladesh. 3.0
9. a) Define FAO code of conduct for responsible fisheries with its objective and general principles. 3.0
b) Explain the management actions of "Marine Fisheries Rules 1983". 4.0
10. a) What are the different types of data used in fisheries management? 2.0
b) Describe probability sampling techniques used for data collection of marine fisheries management. 3.0
c) Differentiate between stratified and cluster sampling. 2.0
11. a) Properly mention the name, area boundary and ban periods of five sanctuaries of hilsa fish in Bangladesh. 3.0
b) Illustrate the life cycle of hilsa fish. Why understanding the life cycle of hilsa fish is important for its management. 4.0
12. a) What do you mean by IUU? Why these fishing activities are major threats in world marine fisheries management. 3.0
b) Diagrammatically describe the tools of EBFM. 4.0
13. a) Prepare a list for artisanal fishing gears used in the Bay of Bengal with their target species. 2.0
b) Briefly describe the fish marketing channel of Bangladesh with proper diagram. 4.0
c) Classify the gill net used for capturing marine fishes of Bangladesh. 1.0
14. a) Define Virtual Population Analysis (VPA). State the basic principle of VPA. 2.0
b) Discuss the steps necessary for VPA. 3.0
c) Write down the application of VPA in marine fisheries management. 2.0

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B. Sc. Fisheries (Hons.) Year -03 Semester-02, Final Examination' 2018
Course No: **ABC302 (T)**, Course Title: **Aquatic Biodiversity and Conservation (Theory)**
Total Marks: 70, Time: 3. hours

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

Section-A

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| 1. | a) | What do you mean by biodiversity? | 1.0 |
| | b) | What are the 3 components of biodiversity? | 3.0 |
| | c) | Write down the economic and ecological importance of aquatic biodiversity. | 3.0 |
| 2. | a) | What is invasive species? | 1.0 |
| | b) | “The introduction of SIS into culture system can reduce the pressure of fishing on inland open-water bodies of Bangladesh.”- Justify. | 3.0 |
| | c) | Discuss the major problems of SIS culture in the context of Bangladesh. | 3.0 |
| 3. | a) | What are the objectives of IUCN Red List? | 2.0 |
| | b) | What are the categories of IUCN Red List? | 3.0 |
| | c) | Why is IUCN Red List called a key conservation tool? | 2.0 |
| 4. | a) | What is fisheries conservation? Write down its objectives. | 3.0 |
| | b) | Provide a list of domesticated indigenous fishes of Bangladesh with their cultural scale. | 4.0 |
| 5. | a) | Elaborate JICA, NORAD, FCID, USAID and DFID. | 2.0 |
| | b) | Discuss the criteria by which aquatic biodiversity is being assessed in preparation red-list. | 5.0 |
| 6. | a) | What is biodiversity index? Describe the factors affecting biodiversity index. | 3.0 |
| | b) | When will you stop sampling in assessing any biodiversity index? - Explain with graph. | 4.0 |
| 7. | a) | How conservation is interlinked with biodiversity of a habitat? Explain. | 3.0 |
| | b) | Discuss the national regulations in place for fish conservation in Bangladesh. | 4.0 |

Section B

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| 8. | a) | “Indigenous fishes are prodigy of a nation.”-Justify. | 2.0 |
| | b) | What are the natural threats of biodiversity loss in the globe? How can you deal with them? | 5.0 |
| 9. | a) | What do you know about protected areas of biodiversity? Describe their types with examples. | 4.0 |
| | b) | Illustrate the proposed protected areas of biodiversity of Bangladesh on a map. | 3.0 |
| 10. | a) | Why <i>Tanguarhaor</i> is called an Ecologically critical area? | 2.0 |
| | b) | Elicit the factors responsible for biodiversity loss in <i>Hakalukihaor</i> and give your suggestions to overcome biodiversity loss. | 3.0 |
| | c) | What is <i>Ramsar</i> site? Enlist the <i>Ramsar</i> sites of Bangladesh with their year of declaration. | 2.0 |
| 11. | a) | What stands for MPA? Epitomize its purposes. | 2.0 |
| | b) | Why ‘Swatch of no-ground’ is called MPA? | 2.0 |
| | c) | Explicate the aquatic biodiversity of Sundarbans mangrove forest. | 3.0 |

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| 12. | a) | What do you mean by ecotourism? | 1.0 |
| | b) | Enlist the ways of habitat alteration and loss due to human activities. | 3.0 |
| | c) | Describe the FAO Code of Conduct for Responsible Fisheries. | 3.0 |
| 13. | a) | Which fisheries conservation technique is found to be the most efficient in Bangladesh? Explain. | 3.0 |
| | b) | How natural breeding can be facilitated through habitat restoration? Discuss with illustration. | 4.0 |
| 14. | a) | Explain <i>in-situ</i> and <i>ex-situ</i> biodiversity conservation methods. | 3.0 |
| | b) | Give an example of <i>in-situ</i> biodiversity conservation method of fish biodiversity in Bangladesh. | 2.0 |
| | c) | What are the indicator species of marine biodiversity? | 2.0 |

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 B. Sc. Fisheries (Hons.) Year -03 Semester-02, Final Examination' 2018
 Course No: **FPT-302 (T)**, Course Title: **Fishery Products Technology (Theory)**
 Total Marks: 70, Time: 3 hours

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

Section-A

1. a) Briefly discuss the importance of "Fishery Products Technology" in seafood industry. 2.0
 b) Why shelf life of frozen fish is longer than chilled fish? 2.0
 c) Explain the major health benefits of fermented fishery products. What are the key factors that govern consumer preference towards these products? 3.0
2. a) Suggest steps to minimize quality products problems of traditional chilled products of Bangladesh. 2.0
 b) Discuss the importance of fish species selection for the development of a fishery product. 3.0
 c) How can you prepare fish fillet from tilapia? 2.0
3. a) What are the constraints of seaweed collection and its processing in Bangladesh? 2.0
 b) Give brief notes of *Konbu*, *Nori* and *Wakame*. 3.0
 c) Discuss the nutritional aspects of seaweed. 2.0
4. a) Distinguish between dry-salted, wet-salted and mixed salted hilsa. 1.0
 b) Why does salted hilsa sometimes become reddish? Give your suggestions to minimize the problem. 3.0
 c) What are the advantages of sun-drying over the other drying methods? 3.0
5. a) Distinguish between cold smoking, hot smoking and liquid smoking. 2.0
 b) Discuss the chemical composition of wood smoke. 2.0
 c) Explain the traditional procedure for the preparation of fish sauce. 3.0
6. a) Define canning. Describe the procedure for the preparation of fish for tuna canning. 4.0
 b) Do you think metallic can be replaced by plastic retort pouch in fish canning industry? Justify. 2.0
 c) List the possible causes of spoilage in canned fish products. 1.0
7. a) Enlist the name of five cryoprotectants used to prepare surimi based products with their functions. 2.0
 b) How can you measure the gel strength of surimi? 2.0
 c) What is katsuobushi? Discuss the production procedure of katsuobushi. 3.0

Section-B

8. a) Briefly describe the method of preparation of surimi. What type of fishes are suitable for surimi production? 1.0
 b) Differentiate between boiled and broiled products. Give examples. 2.0
 c) Give a flow-chart for the preparation of fish sausage. 4.0
9. a) Briefly describe the method of shrimp smoking in Bangladesh. 2.0
 b) Give your suggestions to increase the shelf life of smoked fishery products. 2.0
 c) What are the technological problems associated with smoked fish and shrimp products? 3.0
10. a) Write down the procedure for the preparation of semi-IQF hilsa product. 3.0
 b) Why partial freezing, alternate freezing and thawing is not suitable for the quality of frozen products? 2.0
 c) Write down the names of commercial freezers used for fish freezing. 2.0
11. a) Prepare of list of seaweed species available in the coastal region of Bangladesh. 3.0
 b) How agar powder and agar strips are produced from *Gelidium* sp.? 2.0
 c) What are the main features of fishery by-products for producing value added products? 2.0
12. a) Do you think packaging can be used to increase sale value of fishery products? Justify. 2.0
 b) Do you consider that large scale commercial production of canned fishery products in Bangladesh would be economically viable? Justify your answer. 2.0
 c) Mention two specific commercial spots in Bangladesh for each of following: i) marine fish drying; ii) freshwater fish drying; iii) salting and iv) freezing 3.0
13. a) Write down the grading specification for seawater headless shell-on shrimp. 2.0
 b) Briefly describe the scientific and technological problems associated with frozen fishery products. 5.0
14. a) Illustrate the double seaming process. 2.0
 b) Write down the spoilage of canned fishery products. 3.0
 c) What do you mean by 12D concept? 2.0

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B. Sc. Fisheries (Hons.) Year -3 Semester-2, Final Examination' 2018

Course No: **SFD-302 (T)**, Course Title: **Shellfish Diseases(Theory)**

Total Marks: 70, Time: 3 hours



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

Section-A

1. a) Categorize the factors responsible for producing shellfish diseases. 5
b) How will you mitigate them? 2
2. a) Define etiology and epizootiology. 2
b) Describe two most devastated viral diseases of global shrimp aquaculture. 5
3. a) Mention the importance of lobster in aquaculture. 2
b) Discuss one viral and one fungal disease of lobster. 5
4. a) Distinguish between infectious and non -infectious disease. 2
b) Enumerate some non-infectious diseases of crayfish. 5
5. a) List protozoan parasitic diseases of shellfish with their causative agents. 3
b) Describe two important protozoan parasitic diseases of shrimp with their pathology and preventive measures. 4
6. a) Mention the role of aquatic environment on shellfish health. 3
b) Briefly describe environmental diseases of shellfish with their management measures. 4
7. Write down short notes on any two of the followings: 3.5 X 2 = 7
a) Shellfish export; b) Importance of mollusks; c) Diseases of clam

Section -B

8. a) Mention some fungal diseases of shrimp with causative agents. 1
b) Discuss any two fungal diseases of shrimp. 6
9. a) List non-shrimp crustacean diseases with their causative agents. 2
b) Describe important diseases of mud crab with their clinical signs, etiology and control measures. 5
10. Describe two metazoan parasitic diseases of shrimp with their clinical signs, diagnosis, distribution and preventive measures 7
11. a) Explain the present status of shrimp culture in Bangladesh. 3
b) Write in brief about filamentous bacterial disease in shrimp. 4
12. Describe the effects of dietary diseases on shrimp and prawn health with their management. 7
13. a) Describe crayfish plague with distribution, host range, pathology and diagnosis. 2
b) Discuss general prevention and control measures of shellfish diseases in aquaculture. 5
14. Write down short notes on any two of the followings: 3.5 X 2 = 7
a) Chemotherapy; b) Importance of non-shrimp crustaceans; c) Nutritional diseases of lobster

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B. Sc. Fisheries (Hons.) Year -03 Semester-02, Final Examination' 2018
Course No: ABM 302 (T), Course Title: **Agribusiness and Marketing (Theory)**
Total Marks: 70, Time: 3 hours

Answer 03 (Three) questions from each section, where question no. 01 and 05 are mandatory. Figures in the right margin indicate full mark. Use separate answer script for each section.

Section- A

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| 1) A) Define agribusiness. Explain the scope of agribusiness. | 3 |
| B) Describe the evolution of Agribusiness. | 3 |
| C) Explain the elements of Agribusiness System. | 3 |
| D) Name the Fisheries Products available in Bangladesh. | 2 |
| 2) A) Show the general skills you need to develop If you like to be a good manager. | 4 |
| B) Show the Strategic Management Process | 4 |
| C) Develop a Mission Statement and a Vision Statement for Halda Fisheries. | 4 |
| 3) A) Identify the elements of Directing. | 4 |
| B) Differentiate between Manager and Leader. | 4 |
| C) Point out the qualities of a good leader with example. | 4 |
| 4) A) What are the characteristics of the sole proprietorship that make it an attractive form of business? | 4 |
| C) Elaborate the elements of a typical business plan. | 4 |
| B) Explain the basic functions of Management. | 4 |

Section- B

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|---|---|
| 5) A) Define Marketing and discuss the core concepts of marketing. | 4 |
| B) Identify the different utilities with examples. | 4 |
| C) Define Need, Want and Demand with examples. | 3 |
| 6) A) Identify the key challenges of Fisheries Sector in Bangladesh. | 4 |
| B) Propose your recommendations to Gov't for Future Policy Direction for the development of the Fisheries Sector of Bangladesh. | 4 |
| C) Identify the key challenges of Commercial Fish Farms in Bangladesh. | 4 |
| 7) A) What do you mean by marketing environment? Explain the uncontrollable forces of market environment. | 6 |
| B) Explain different types of marketing channel. Illustrate a common marketing channel for agricultural products. | 6 |
| 8) A) Develop five SMART Business/Marketing Objectives for a hypothetical organization. | 4 |
| B) Exemplify 7Ps of Marketing. | 4 |
| C) "Customer is the King in the Kingdom of Marketing"- Do you agree? Justify your answer. | 4 |

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B. Sc. Fisheries (Hons.) Year -3 Semester-2, Final Examination' 2018

Course No: ADC-302 (T), Course Title: **Aquafarm Design and Construction(Theory)**

Total Marks: 70, Time: 3 hours

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

Section-A

1. a) Justify the term-Maintaining C:N ratio is the major concern in biofloc technology. 3
b) Differentiate among biofloc, raceway and Recirculatory Aquaculture System (RAS). 4
2. a) Develop a standard cost benefit analysis plan for a proposed intensive fish project. 4
b) Argue on determination of which technology is the future to increase sustainable aquaculture production. 3
3. a) Explain the aquafarm design process for a super intensive project. 4
b) Develop a standard design and construction plan for a commercial aquafarm in coastal belt of Bangladesh. 3
4. a) What is meant by hydrolic circuit? 1
b) Explain water flow through channel, pipe and sluice gate. 6
5. a) Characterize a suitable site for cage farm with an example in Bangladesh. 3
b) Describe discuss and construction process of a cage farm. 4
6. a) Plan how to manage waste and water quality in biofloc aquaculture system. 4
b) Identify the major problem and their solution of biofloc technology. 3
7. Write down short notes on any two of the followings: 3.5 X 2 = 7
a) Hydrology; b) Meteorological information for an aquafarm; c) Water quality standard for aquaculture

Section -B

8. a) Design a thirty ton production capacity commercial raceway farm. 5
b) Diagrammatically show the features of a commercial fish pond. 2
9. a) Illustrate the RAS process with the waste water treatment process. 4
b) 'Utilization of topography can reduce costs in coastal aquafarming'-explain. 3
10. a) What are the key characteristics of an earthen pond? 2
b) Classify different types of pond system in aquaculture farming. 5
11. a) How you will choose the best size for your pond? 2
b) Water depth of pond varies from dry to cold region - why? 2
c) Scientifically design and construct pond dyke. 3
12. a) Categorize different types of fish feed ingredients in terms of their physical characteristics. 2
b) Describe different feeders used in aquaculture farms. 5
13. a) List the basic structural components of a tilapia hatchery 2
b) Distinguish between the structural patterns of a tilapia and carp hatchery. 5
14. Write down short notes on any two of the followings: 3.5 X 2 = 7
a) Sand filter; b) Flexible tube stand pipe; c) Monk outlet structure

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B. Sc. Fisheries (Hons.) Year -3, Semester-2, Final Examination' 2018
Course No: **FGB-302 (T)**, Course Title: **Fish Genetics and Biotechnology (Theory)**
Total Marks: 70, Time: 3 hours



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

Section-A

1. a) What are the objectives of studying 'Fish Genetics and Biotechnology'? 3
b) Narrate the scope of Genetics and Biotechnology in Fisheries sector. 4
2. a) What makes prokaryotic cell unique from other type of cell? 2
b) Illustrate the cell cycle of eukaryotic organisms with the activities of each component. 5
3. a) List the compositions of a eukaryotic chromosome. 2
b) How do you contrast the physical structure of chromosome, DNA and gene? 3
c) Give examples of chromosome aneuploidy. 2
4. a) Mention the functions of the following enzymes during DNA replication: DNA helicase, DNA polymerase, topoisomerase and primase. 2
b) Explain the DNA replication process with necessary figures. 5
5. a) Define reproduction. What are the modes of reproduction? 2
b) Narrate briefly the primary and secondary sexual characters observed in different fish. 5
6. a) State the 'Law of Segregation'. How does it differ from the 'Law of Independent Assortment'? 2
b) Explain the 'Law of Independent Assortment' with an example from fish. 5
7. a) Define fertilization and mention its types. 2
b) Explain the steps of egg-sperm interaction during fertilization with diagram. 5

Section-B

8. a) What is inbreeding? Mention the consequences of inbreeding. 2
b) How will you control inbreeding in fish hatchery? 5
9. a) What do you mean by genetic linkage? 1
b) How does genetic linkage work? 4
c) Differentiate between linkage and independent assortment. 2
10. a) Differentiate inbreeding from hybridization. Which is better in terms of restoring genetic quality of fish? Why? 3
b) 'Directional selection can be the best option in undertaking selection program in Fisheries'-justify the statement. 4
11. a) What is lethality? 2
b) Explain the phenotypic expression of lethal gene action in fish. 4
c) Why Mendel's 'law of segregation' is referred to as 'law of purity of gametes'? 1
12. a) What is gynogenesis? 2
b) Illustrate the method of mitotic diploid gynogenesis. 5
13. a) What do you mean by sex differentiation and sex determination? 2
b) Explain the sex determination systems observed in fishes with example. 5
14. Write notes on any **02 (Two)** of the followings: 3.5×2= 7
i) Cryopreservation; ii) Multiple allelism and iii) Sex linked inheritance