

Chattogram Veterinary and Animal Sciences University, Chattogram

Faculty of Fisheries

B. Sc. Fisheries (Hons.) Year -3 Semester-2, Final Examination' 2019

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) Why the knowledge on Fishery Products Technology is essential for a fisheries graduate? 2
b) Illustrate different types of cold store with their pros and cons. Which type of cold store would be suitable for better shelf life of fishery products? Justify your answer. 3
c) Write down the grading specification for freshwater headless shell on block frozen shrimp. 2
2. a) Write in brief "Cooked shrimp". 5
b) Between cooked shrimp and frozen shrimp which is better on the basis of safety? Cite reasons in favour of your answer. 2
3. a) Illustrate different parts of seaweed. 2
b) Mention nutraceutical uses of seaweed. 2
c) What are the major constraints of seaweed culture in Bangladesh? How can you overcome that hindrance? Do you think seaweed culture would be profitable in Bangladesh? 3
4. a) "Surimi is an intermediate product"- justify your answer. 2
b) What types of fish species are suitable for the preparation of surimi based products? Why? 2
c) What types of fishery products can be prepared from surimi? Describe any 2 (two) of them. 3
5. a) What is smoking? How does smoke preserve the fish? 2
b) Write short note on BFFEA. 2
c) Discuss briefly the scientific and technological problems associated with frozen fishery products. 3
6. a) Prepare a list of heat processing equipment which are used for heat processing during fish canning. 1
b) Draw a typical flow chart for canning of Tuna. 4
c) What are the main types of spoilage in fish can? 2
7. a) Write technological problems of fish drying. 3.5
b) Write technological problems of fish salting. 3.5

Section B

8. a) Briefly describe the methods of conventional shrimp smoking practiced in Bangladesh. 3
b) What kinds of problems are usually faced in curing of fish and fish roe? How will you solve these problems? Which points are needed to be taken in account during storage of salted fish and fish roe? 4
9. a) Write in brief on "fish maws". 4
b) Write the use of isinglass. 1.5
c) Write the use of fish protein hydrolysates. 1.5
10. a) Justify the suitability of 5 (five) fishes for canning. 2
b) How will you justify canning is the best method of processing leads to preserve all the methods practiced? 2
c) Discuss the struvite formation, sulphide blackening and blue discoloration problems of canned product. 3
11. a) Write the formula used to calculate salt quantity required for fish salting. 1
b) Write the flow diagram of pickled herring preparation (European product). 4
c) Diagrammatically show the effect of salt on protein. 2
12. a) Illustrate the working procedure of fish mincer. 2
b) What is cryoprotective agent? Write down the role of additives used during manufacture of surimi. 2
c) What is fish glue? How can it be processed? 3

13. a) Distinguish among dry-salted, wet-salted and mixed salted hilsha.
b) Classify fermented fishery products.
c) Explain the production procedure of a semi fermented fishery product commonly consumed in Bangladesh.

3.5 X 2 = 7

14. Write down short notes **any 2 (TWO)** on following:
i) Fish cake; (ii) Kamaboko and (iii) Fish marinades.

Chattogram Veterinary and Animal Sciences University, Chattogram
Faculty of Fisheries

B. Sc. Fisheries (Hons.) Year-3, Semester-2, Final Examination' 2019

Course No: AEN-302 (T), Course Title: **Aquaculture Engineering (Theory)**

Total Marks: 70, Time: 3 hours

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

Section-A

1. a) Define aquaculture systems. 2
- b) Describe different land-based aquaculture systems with diagrams. 5
2. a) 'Domestication is the first step of artificial breeding' - explain. 3
- b) Discuss the components for a marine fish hatchery setup. 4
3. a) Classify different types of pumps used in aquaculture farms? 1
- b) Explain water flow through channel, pipe and sluice gate. 6
4. a) Relate three basic components of a successful aquafarm project design. 2
- b) Explain the stages of the design process to construct an aquaculture farm. 5
5. a) 'Proper engineering in hydraulic circuit can reduce future maintenance cost' - how? 3
- b) Estimate the annual discharge rate through a spring near your project. 4
6. a) Define tender, bid, contract and work order. 3
- b) Discuss the major points to evaluate tender documents following the guidelines FAO for construction of aquaculture farms. 4
7. Write short notes on any 02 (two) of the following: 3.5 X 2 = 7
- a) Hydrology, b) Legal consideration of fish farming and c) Biofloc aquaculture.

Section B

8. a) What are the key characteristics of a monk? 1
- b) Characterize and mention the functions of worming ponds, mixed ponds and inset ponds. 6
9. a) Enlist the structural components of a carp hatchery complex. 2
- b) Describe major components of a hatchery proper in a carp hatchery complex? 5
10. a) What are the site selection criteria for raceway culture? 2
- b) Develop a raceway fish farm model for a commercial aquafarm. 5
11. a) What are the basic steps of a catfish farm operation? 2
- b) Illustrate major components of a typical pangasius pond to get maximum yield. 5
12. a) Enlist the biological and operational factors of an aquafarm. 2
- b) Discuss the steps of aquafarm design process for a seabass farm. 5
13. a) Why is wastewater treatment important in Bangladesh? 2
- b) Briefly describe the biological methods of wastewater treatment. 5
14. Write short notes on any 02 (two) of the following: 3.5 X 2 = 7
- a) Aquafarm outlet structures, b) Blower and c) FCR in Raceway.

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Chattogram Veterinary and Animal Sciences University, Chattogram
Faculty of Fisheries

B. Sc. Fisheries (Hons.) Year-3, Semester-2, Final Examination' 2019

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

Total Marks: 70, Time: 3 hours

*Answer any **05 (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 is current trend of aquaculture systems development in Bangladesh? 2
b) Illustrate different specialized land-based aquaculture systems with diagrams. 5
2. a) Explain the significance of proper hydraulic circuit in aquafarm. 3
b) Briefly describe hydrological cycle relating to aquaculture in Bangladesh. 4
3. a) Compare between capital and revenue expenditure. 2
b) Explain the term- Breakeven point, non-recurring expenditure and depreciation. 3
c) Estimate the payback period for a shrimp hatchery. 2
4. a) Relate three basic components for a successful aquafarm project design. 3
b) Explain the stages of the design process to construct an aquafarm. 4
5. a) 'Domestication is the first step of artificial breeding'- explain. 3
b) Describe the components of a seabass hatchery setup. 4
6. a) Mention the criteria for selecting a commercial aquafarm. 2
b) Illustrate a standard pond dyke. 2
c) How will you estimate the dyke ratio, dam height and crest length? 3
7. Write short notes on any **02 (Two)** of the following: 3.5 X 2 = 7
a) RAS; b) Farm hygiene and c) FCR in Biofloc.

Section B

8. a) Define tender, bid, contract and work order. 2
b) Describe the major points to evaluate tender documents following FAO guidelines for construction of aquaculture farms. 5
9. a) 'Maintaining C: N ratio is the major concern in biofloc technology'- justify. 3
b) How catfish can be cultured in biofloc? 4
10. a) Enlist the biological and operational factors for aquafarm planning. 3
b) Discuss the stages of aquafarm design process for a crab farm. 4
11. a) What are the basic steps of a fish farm operation? 3
b) Demonstrate the flow chart of a Pangas farm operation. 4
12. a) How you will select a suitable site for cage culture? 3
b) Select the suitable size and shape of cage for aquaculture purposes. 4
13. a) Why wastewater treatment is important in Bangladesh? 2
b) Briefly describe the physical methods of wastewater treatment. 5
14. Write short notes on **any 02 (Two)** of the following: 3.5 X 2 = 7
a) Monk outlet; b) Flexible tube stand pipe and c) Water quality standard for aquafarm.

Chattogram Veterinary and Animal Sciences University, Chattogram
Faculty of Fisheries

B. Sc. Fisheries (Hons.) Year -3 Semester-2, Final Examination' 2019

Course No: **FGB-302 (T)**, Course Title: **Fish Genetics and Biotechnology (Theory) (Old Curriculum)**

Total Marks: 70, Time: 3 hours

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

Section-A

1. a) Define genetics. 1
b) Write down the significance of studying fish genetics. 3
c) Give a brief account of biotechnological application in fisheries. 3
2. a) What is cell? Distinguish between prokaryotic and eukaryotic cells. 3
b) Draw a labelled diagram of a eukaryotic cell. Write the functions of three important cell organelles. 4
3. a) Describe the stages of meiosis mentioning important events. 5
b) What are the genetic significances of meiosis? 2
4. a) Define Mendel's law of segregation. 2
b) Explain how inheritance of scale pattern occurs in common carp. 5
5. a) What do you mean by chromosome manipulation and how will you do it? 2
b) How will you produce gynogenetic tilapia (*Oreochromis niloticus*)? 4
c) Mention the importance of triploids. 1
6. a) What is effective breeding number? 1
b) Explain the relationship between 'Ne' and 'F' with example. 2
c) How will you measure the rate of inbreeding? 4
7. Write down short notes **any 02 (TWO)** on the following: 3.5 X 2 = 7
i) Crossing over; (ii) Epistasis and (iii) Spermatogenesis.

Section B

8. a) What is sex determination? 1
b) Discuss how the sexes of the fish embryo are determined in different groups of fishes. 6
9. a) Define allele, gene and gene pool. 2
b) What are the chemical constituents of chromosome? 1
c) Describe the process of DNA packaging in chromosome. 4
10. a) What are the genetic consequences of inbreeding? 2
b) Briefly discuss the strategies that can be followed to control inbreeding. 5
11. a) What is sexuality and mode of reproduction? 2
b) Discuss the secondary sexual characters which are observed in fish. 5
12. a) What do you mean by hybrid and hybrid vigor? 2
b) "No selection is the best selection"- justify your answer. 3
c) Differentiate between inbreeding and hybridization. 2
13. a) What do you know about sex-linked inheritance? 2
b) Briefly describe X-linked inheritance in fish. 5
14. Write down short notes **any 02 (TWO)** on the following: 3.5 X 2 = 7
i) Ploidy; (ii) Multiple allelism and (iii) Cryopreservation.

Chattogram Veterinary and Animal Sciences University, Chattogram

Faculty of Fisheries

B. Sc. Fisheries (Hons.) Year -3 Semester-2, Final Examination' 2019

Course No: MBE-302 (T), Course Title: Molecular Biology and Embryology (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) Define molecular biology and embryology. 2
b) Justify the study of molecular biology and embryology in respect of fisheries. 2
c) How will you apply your knowledge of embryology in fisheries? 3
2. a) Why DNA replication is considered a semi-conservative process? 1
b) Describe the mechanism of DNA replication with diagram. 6
3. a) What is transcription? 1
b) Briefly describe the process of transcription in eukaryotes with figures. 5
c) What is genetic code? 1
4. a) What is meant by gene expression and why regulation of gene expression is necessary? 2
b) Mention the steps at which expression of a gene is regulated. 2
c) How RNA transport from the nucleus is regulated? 3
5. a) Define reproduction. Mention the different types of reproduction. 2
b) Explain different types of sexual reproduction in fishes with example. 5
6. a) Differentiate between lobular and tubular testes. 2
b) Illustrate the representative types of urinogenital systems in female fishes. 5
- 7 a) Define organogenesis. 1
b) 'Embryonic induction initiates organ formation'- explain the statement with example. 6

Section B

8. a) Distinguish between spermatogenesis and oogenesis. 2
b) Discuss the process of oogenesis in fish. 5
9. a) Define fertilization. Mention the major steps to complete fertilization. 2
b) Illustrate egg-sperm interaction and gamete fusion during formation of zygote. 5
10. a) Define cleavage. 1
b) Describe the spiral holoblastic cleavage pattern with figures. 6
11. a) Define gonad and gamete. 2
b) Explain the functional morphology of teleost testes with figures. 5
12. a) What is gametogenesis? Explain the changes occur in spermatids of fish during spermiogenesis with figures. 4
b) Diagrammatically show the structural components of a mature sperm with their functions. 3
13. a) Define gastrulation. How does gastrulation take place in sea urchin? 4
b) Diagrammatically show the fate of germ layers formed during gastrulation. 3
14. Write down short notes **any 02 (TWO)** on following: 3.5 X 2 = 7
i) Polyspermy; (ii) Structure of a mature egg and (iii) Operon.

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B. Sc. Fisheries (Hons.) Year -3 Semester-2, Final Examination 2019

Course No: ABM 302 (T), Course Title: **Agribusiness & Marketing (Theory)**

Total Marks: 70, Time: 3 hours

Answer any any three (3) questions from each section where **Question No. 1 and 5 are mandatory**. Figures in the right margin indicate full mark. Use separate answer script for each section.

Section- A

- 1) a) Define Agribusiness. Explain the scope of agri-business. 1+2
b) Describe the elements of Agribusiness System. 4
c) Explain the four basic forms of Business Organization on the basis of ownership. 4
- 2) a) Demonstrate the Strategic Management Process.
b) Suppose you are Business Development Manager of Marine Harvest- a Norwegian seafood company. Develop four SMART Objectives related to its business development. 4
c) Develop a hypothetical SWOT analysis for Marine Harvest. 4
- 3) a) Mention some Principles of Management proposed by Fayol. 4
b) Define agribusiness management. Illustrate the major functions of management. 4
c) Give examples how you will motivate your subordinates in general. 4
- 4) a) Elaborate the elements of a typical Business Plan. 4
b) Demonstrate the key characteristics of a successful entrepreneur from real life example. 4
c) Explain the possible reasons for not developing entrepreneurship among graduates in Bangladesh. 4

Section- B

- 5) a) Define Marketing. 3
b) Propose the scopes of Marketing as a Fisheries graduate. 4
c) Propose marketing mix for marine fish in Bangladesh. 4
- 6) Suppose you are planning for starting a Fish Farm in your village
a) Explain the uncontrollable forces of market environment for your business. 4
b) Predict two opportunities and two threats in the external environment. 4
c) Propose some ideas to create value for your product. 4
- 7) a) Outline the steps in the Marketing Strategic Planning. 6
b) Explain the major parts or contents of a typical Marketing Plan. 6
- 8) a) Suppose you work in the production team of a manufacturing company. The company's product promised to a major customer is running late and there was intense pressure on the production team to deliver the product. The Director of Production was eventually told by the company CEO -"deliver or else." The Director therefore decided to ship the product, even though it had not gone through all its testing procedures. Members on the production team were angry by the uncertainty in the functionality and reliability of the shipped product. The Director however insisted: "We will just have to take that chance."
If you are the Director of Production, how would you act differently?" 6
b) Explain Porter's Five Factor Analysis for identifying competitive advantage with example. 6

Chattogram Veterinary and Animal Sciences University, Chattogram

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B. Sc. Fisheries (Hons.) Year-3, Semester-2, Final Examination' 2019

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

Total Marks: 70, Time: 3 hours

Answer any **05 (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 general health indicators of shellfishes?
b) Mention the distinct indicators to determine the disease state of shellfishes in aquaculture of Bangladesh.
2. a) Why environmental factors are so crucial for shrimp aquaculture?
b) Discuss the present status of shellfish aquaculture in Bangladesh.
3. a) Explain the importance of health management in shrimp aquaculture.
b) How you will prevent dietary diseases in prawn?
4. a) Name important infectious agents in shellfish farming.
b) Briefly describe WSS with its causative agent, clinical signs, preventive and control measures.
5. a) What do you know about crab culture in Bangladesh?
b) Discuss two important diseases of crab.
6. a) What do you know about the farming of lobster, crabs and crayfish?
b) Discuss major diseases of lobster and crayfish.
7. Write short notes on any **02 (two)** of the following:
a) Oyster disease, b) Withdrawal period and c) YHD.

Section B

8. a) Name major environmental problems in shrimp farming.
b) Discuss dietary health problems of shrimp with their control measures.
9. a) Define chemotherapy and chemotherapeutic.
b) Enumerate the chemotherapeutics used in shellfish aquaculture with their mode of action.
10. a) Differentiate between protozoan and metazoan diseases in shellfish.
b) Describe common protozoan parasitic diseases of crustaceans with their clinical signs, distribution, and host range and control measures.
11. a) Mention the importance of mollusc farming in Bangladesh.
b) Briefly discuss major diseases of mollusc.
12. a) Why the outbreak of fungal diseases is occurred in the shellfish farms?
b) Describe fungal diseases of crustaceans with special emphasis on their mitigation measures.
13. a) What do you know about diseases of clam?
b) Discuss the treatment methods of these diseases.
14. Write short notes on any **02 (two)** of the following:
a) Disease producing factors, b) Epizootiology and c) Metazoan infection in shrimp.

Chattogram Veterinary and Animal Sciences University, Chattogram
Faculty of Fisheries

B. Sc. Fisheries (Hons.) Year -03 Semester- 02, Final Examination' 2019

Course No: **ABC 302 (T)**, Course Title: **Aquatic Biodiversity and Conservation (Theory)**

Total Marks: 70, Time: 3 hours

Answer any **05 (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 do you mean by biodiversity? 1
b) How can you differentiate among species, ecosystem and genetic biodiversity? 3
c) Write down the economic and ecological importance of aquatic biodiversity. 3
2. a) What do you mean by "IUCN Red-list"? 1
b) Specify the goals of Red-list program. 2
c) What are the categories of IUCN Red-list? 4
3. a) How can biodiversity conservation help with climate change adaptations? 3
b) How can we minimize the scale and impact of climate change on coastal and marine biodiversity? 4
4. a) What is SIS? 1
b) What are the on-going threats in the natural habitats of SIS? 3
c) Explicate your suggestions to overcome those. 3
5. a) Why *ex-situ* conservation is called long-term conservation? –Discuss. 2
b) Describe different *in-situ* ways of fisheries conservation. 5
6. a) What stands for FFS? Write its importance in the context of aquatic conservation. 2
b) Briefly summarize the aquatic biodiversity of *Tanguar Haor* along with their threats and recommendation. 5
7. a) Write a note on - 'success of Bangladesh over the dispute of delimitation of maritime boundary.' 3
b) How exploration of 'Blue-economy' can be helpful in achieving the SDG- 'Life below water' in the context of Bangladesh? -Explain 4

Section B

8. a) What do you mean by ecotourism? 1
b) Enlist the ways of habitat alteration and loss due to human activities. 3
c) Describe the FAO Code of Conduct for Responsible Fisheries. 3
9. a) Describe the ecological principles of aquatic biodiversity conservation. 3
b) Describe the UNESCO World Heritage Convention (WHC) in brief. 4
10. a) What do you know about the protected areas? Describe their types with examples. 4
b) Illustrate the notified protected areas of Bangladesh on a map. 3
11. a) What do you mean by Ecologically Critical Areas (ECAs)? 1
b) Why 'swatch of no ground' has been declared as MPA? 2
c) Briefly describe the aquatic biodiversity of *Sundarbans* mangrove forest. 4
12. a) What is conservation aquaculture? 1
b) What do you know about live gene banking as a conservation tool? 2
c) "Exotic fishes are effective means of utilizing vacant niches"- To what extent you agree or disagree with this statement? 4
13. a) Why legal framework of biodiversity conservation should be in line with fishers' interest? 3
b) "Establishment of fish sanctuaries is the best conservation tool in the context of Bangladesh."- justify the statement. 4
14. a) Which is the first international agreement for globe's biodiversity conservation? Mention its goals. 3
b) What are your recommendations for convenient imposition of CBD in Bangladesh? 4

Chattogram Veterinary and Animal Sciences University, Chattogram
Faculty of Fisheries

B. Sc. Fisheries (Hons.) Year-3, Semester-2, Final Examination' 2019
Course No: **FPH-302 (T)**, Course Title: **Fish Pharmacology (Theory)**

Total Marks: 70, Time: 3 hours

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

Section-A

1. a) Define fish pharmacology. What are the objectives of fish pharmacology? 3
b) Discuss the scope and prospects of pharmacology in aquaculture. 4
2. a) Define pharmacodynamics and pharmacokinetics. What do you know about the drug metabolism in fish? 5
b) Enumerate the main actions of drugs. 2
3. a) What do you mean by dose response and withdrawal period? 2
b) Which precaution should be taken during the application of aquadrugs? 3
4. a) 'Some pathogenic microorganisms are susceptible to disinfectants' - explain. 3
b) Describe some disinfectants applicable to aquaculture with their mode of action. 4
5. a) Distinguish between agonist and antagonist. 2
b) What are the antibacterial agents of fish? List down the dosages of some FDA recommended antibacterials in fish. 5
6. a) Describe some breeding inducing and sex control agents with their doses and applications in the aquaculture of Bangladesh. 3
b) Explain the toxicological perspectives of aqua-drugs on the osmoregulation of freshwater fish. 4
7. Write short notes on any 02 (two) of the following: 3.5 X 2 = 7
a) Safety of aquaculture medicines, b) Withdrawal period and c) Drug resistance.

Section B

8. a) Categorize the criteria for the selection of routes for drug administration. 2
b) Illustrate the drug administration process in fish. 5
9. a) Describe the use of breeding including drugs in aquaculture. 6
b) Write down the impact of hormone in induced brood fish. 1
10. a) What are the rules for the best practice of fish anaesthesia? 3
b) Discuss about anaesthetics usage in different fish species. 4
11. a) Explain aquaculture as a source of antibiotic resistance in human pathogens. 3
b) What are the possible effects of aquadrugs on fish health? 4
12. a) Describe standard methods for disinfecting wastewater. 2
b) What are the routine disinfection procedures in aquaculture? 5
13. a) How is drug approved before using in the field of aquaculture? 3
b) Discuss how you can reduce the adverse effects of drugs. 4
14. Write short notes on any 02 (two) of the following: 3.5 X 2 = 7
a) Drug laws, b) Possible effects of aqua-drugs on environment and c) Immunostimulants in aquaculture.

Chattogram Veterinary and Animal Sciences University, Chattogram

Faculty of Fisheries

B. Sc. Fisheries (Hons.) Year -03 Semester- 02, Final Examination' 2019

Course No: CCF 302 (T), Course Title: **Climate Change and Fisheries (Theory)**

Total Marks: 70, Time: 3 hours

Answer any 05 (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 is climate change? 2
b) What are the causes of the climate change? 3
c) How is Bangladesh vulnerable to climate change? 2
2. a) How does global warming affect the ocean? 4
b) Why is climate change a threat to the coral reef ecosystem? 3
3. a) What is primary production? 2
b) How climate change is altering the rate and distribution of primary production in the world's oceans? 5
4. a) What does ODS stands for? Point out the some uses of it. 2
b) Mention the purpose of 'Montreal Protocol'. 2
c) Discuss the effectiveness of this protocol as a successful international treaty in conserving the climate of the globe. 3
5. a) Differentiate between artisanal fisheries and marine fisheries. 2
b) How institutional policy can be helpful in meeting climatic challenge? 3
c) Enlist the factors that control the 'vulnerability' of regions, groups and hot spots. 2
6. a) Mention the contribution of Fisheries Sector in terms of GDP, Agricultural Economics and Income Generation of People. 3
b) Estimate aquaculture's potential contribution to climate change. 4
7. a) Define adaptation response in climate science. 2
b) Enlist the factors responsible for successful adaptive capacity in Asia. 2
c) Provide your possible suggestions to achieve such factors in favorable conditions. 3

Section B

8. a) How does climate change impact on inland capture fisheries and related livelihoods in Bangladesh? 4
b) What kind of adaptation strategies might help to reduce these impacts? 3
9. a) What are the threats to aquaculture from climate change? 2
b) How climate change is increasing the risk to aquaculture posed by diseases? 2
c) What are the challenges of predicting climate change impacts on culture fisheries? 3
10. a) Why aquaculture has been considered as an important "remedy" to successfully address the challenges to global food security arising from climate change? 5
b) Does aquaculture contribute to climate change? 2
11. a) Define green-house effects. 2
b) Why is water vapor not considered as a potential 'green-house gas'? 2
c) If earth's ice melts and flows into the ocean, what would happen to the planet's rotation? 3
12. a) Enlist the hypotheses that relate fish recruitment in marine environment. 2
b) Show schematically the Oscillating Control Hypothesis. 3
c) Differentiate between 'food chain' and 'food web'. 2
13. a) Describe the potential positive impacts of climate change in fisheries sector. 4
b) Illustrate a graph to show the contribution of aquaculture and capture fisheries to fish for human consumption over years. 3
14. Write short notes: (Any two) 3.5×2=7
a) Physiological effects of climate change, b) Ecosystem Approach to Aquaculture,
c) Fridays for Future, d) UNFCCC.

Chattogram Veterinary and Animal Sciences University, Chattogram
Faculty of Fisheries
 B. Sc. Fisheries (Hons.) Year -3 Semester-2, Final Examination' 2019
 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 script for each section.

Section-A

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|----|--|--|-------------|
| 1. | a) | Differentiate between Marine Fisheries Management and Inland Fisheries Management. | 2 |
| | b) | Diagrammatically represent the function and responsibilities of a fisheries management authority. | 2 |
| | c) | Suppose you are studying Marine Fisheries Management at B. Sc. Fisheries (Hons.) level. So what will be your field of work after the graduation? | 3 |
| 2. | a) | Differentiate between crafts and gears. | 2 |
| | b) | Classify the trawlers with their target species. | 2 |
| | c) | Explain the role of long line fishing for sustainable fisheries management. | 3 |
| 3. | a) | Summarize the principles of EBFM. | 3 |
| | b) | Describe the tools of EBFM used for fisheries management. | 4 |
| 4. | a) | Sketch the recruit type sea ranching program. | 2 |
| | b) | Why IUU are major threats in world marine fisheries management? | 2 |
| | c) | How closed season are implemented for managing the marine fisheries sector? | 3 |
| 5. | a) | Mention the name and location of major fishing grounds of the Bay of Bengal (BoB). | 2 |
| | b) | What do you know about the hydro-biological features of major fishing grounds of BoB? | 5 |
| 6. | a) | What is meant by artisanal fisheries? | 2 |
| | b) | Write the name of different gears used in artisanal fishing in the Bay of Bengal. | 3 |
| | c) | What do you know about the livelihood of artisanal fishermen of our country? | 2 |
| 7. | Write down short notes any 2 (TWO) on following: | | 3.5 X 2 = 7 |
| | a) Mangrove Fisheries, b) Fishing Efficiency and c) Fishing in the international waters. | | |

Section B

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|-----|--|---|-------------|
| 8. | a) | Define Fisheries Management. | 2 |
| | b) | Write about the purpose and significance of fisheries management. | 3 |
| | c) | What are the major limitations in the management of our marine fisheries resources? | 2 |
| 9. | a) | What are the common methods of fisheries management? | 2 |
| | b) | What do you know about the input and output control measures in fishery management? | 3 |
| | c) | Give some examples of input and output control measures in fishery management. | 2 |
| 10. | a) | What do you understand by MSY and MEY in fisheries management? | 2 |
| | b) | Summarize the present trend of marine capture fisheries in Bangladesh. | 5 |
| 11. | a) | Describe the term "Fishing Efficiency". | 1 |
| | b) | Why understanding the life cycle Hilsha fish is important for its management? | 2 |
| | c) | Develop a management framework for the MFM of Bangladesh. | 4 |
| 12. | a) | What is LFDA? | 1 |
| | b) | Explain gear selectivity. | 2 |
| | c) | Assemble the major parameters used in gear selectivity. | 4 |
| 13. | a) | Define CCRF with its nature and scope. | 2 |
| | b) | How MFTS generate the management actions for "Marine Fisheries Rules 1983" in Bangladesh. | 5 |
| 14. | Write down short notes any 2 (TWO) on following: | | 3.5 X 2 = 7 |
| | a) MSY and MEY, b) Length Frequency Analysis and c) Community Based Fisheries Management (CBFM). | | |