Chattogram Veterinary and Animal Sciences University
Faculty of Fisheries
Department of Fisheries Resource Management

Master of Science in Fisheries Resource Management, July-December Semester Final Examination' 2020

Course No: **WQA-502 (Compulsory)**, Course Title: Water Quality and Pollution Analysis

Total Marks: 40, Time: 2 hours

Answer any **FOUR** questions. Illustrate your answer wherever necessary. Figure in the right margin indicates full marks.

1.	(a)	Mention some special characteristics of water to support fishes as a living media.	3.0
	(b)	Classify water quality variables with the acceptable range required in aquaculture.	3.0
	(c)	Develop a comparison on the productive and unproductive ponds on the basis of water quality variables.	4.0
2.	(a)	Compare and contrast between point source and non-point source of water pollution.	4.0
	(b)	Briefly describe the major sources of land based and sea based pollutants in the Bay of Bengal.	6.0
3.	(a)	"Concentration of free CO_2 becomes high before sunrise"- Explain this statement.	2.0
	(b)	Identify the H_2S gas problem in your pond.	4.0
	(c)	Describe the iron management techniques used in aquaculture production systems.	4.0
4.	(a)	"Cage fish farming can affect the environments"- explain.	3.0
	(b)	How water temperature, fish growth and reproduction are interlinked with each other?	3.0
	(c)	In Bangladesh what types of culture systems is more feasible? Discuss in your point of view.	4.0
5.	(a)	Differentiate between sewage and sludge.	2.0
	(b)	"Sewage pollution is a great barrier in water body"- explain the statement.	3.0
	(c)	Illustrate the primary, secondary and tertiary treatment of industrial effluent.	5.0
6.	(a)	Classify the common types of liming materials and choose which one is best for aquaculture pond.	3.0
	(b)	Which factors should be considered before liming in fish pond?	3.0
	(c)	Describe the different methods of applying lime in fish pond.	4.0

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Course No: **MCR-502 (Compulsory)**, Course Title: Mangroves Conservation and Restoration
Total Marks: 40, Time: 2 hours

Answer any **FOUR** questions. Illustrate your answer wherever necessary. Figure in the right margin indicates full marks.

1.	(a)	"Mangrove forest acts as a bio-shield to protect climatic disorders in surrounding areas"- Explain with examples.	4.0
	(b)	Discuss the major hydro-meteorological and biological factors affecting the biodiversity in mangrove fisheries.	6.0
2.	(a)	Mention the basic requirements for mangrove development.	2.0
	(b)	Enlist 10 commercially important aquatic fauna found in mangrove forest with scientific name and common name.	4.0
	(c)	Describe significant role of mangrove vegetation on the ecology of coastal area of Bangladesh.	4.0
3.	(a)	"Mangroves contribute to our economy with huge influence on marine fisheries"- Justify.	4.0
	(b)	Criticize and recommend ongoing threats of Sundarban mangrove forest in the light of ecotourism.	6.0
4.	(a)	Illustrate nitrogen cycles in mangrove ecosystem.	5.0
	(b)	Briefly describe the impacts of shrimp farming on mangrove forest with special reference to "Chakaria Sundarban Mangrove Forest" in Bangladesh.	5.0
5.	(a)	Why acid sulphate soils are generally concentrated in the coastal area?	3.0
	(b)	Mention the indicators of acid sulphate soils.	2.0
	(c)	Write down the management techniques of acid sulphate soils in coastal area.	5.0
6.	(a)	Define mangrove restoration and regeneration.	3.0
	(b)	Write down the role of community participation in Sundarban mangrove forest management.	7.0

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Course No: **FBD-502 (Compulsory)**, Course Title: Fisheries Biodiversity
Total Marks: 40, Time: 2 hours

Answer any **FOUR** questions. Illustrate your answer wherever necessary. Figure in the right margin indicates full marks.

1. (a) Define ecosystem biodiversity. 2.0
   (b) Elaborate your comprehensibility regarding human involvement for the loss of biodiversity. 4.0
   (c) Compare and contrast between ecosystem diversity between Karnaphully river and Halda river. 4.0

2. (a) "Indigenous biological resources are marvel of a nation.''-Justify with relevant ecological and economical significance. 4.0
   (b) Prepare and develop a comparison of piscine and non-piscine aquatic fauna conservation. 6.0

3. (a) Write down the negative impacts of introducing alien fish species to native habitat. 4.0
   (b) Develop an alternative economics of exotic fauna in Bangladesh. 6.0

4. (a) Differentiate between wetland restoration and wetland rehabilitation. 4.0
   (b) How will you manage aquatic biodiversity of coral reef island in terms of eco-tourism and fisheries? 6.0

5. (a) What is ADMAs? Where and when can you apply it for aquatic resource conservation? 4.0
   (b) Compare the mathematical models of Shannon's and Simpson's index of biodiversity assessment. 6.0

6. (a) How will global climate change and ocean acidification affect ocean biodiversity? 3.0
   (b) "The declaration of a game reserve can boost biodiversity conservation"- Explain the statement. 3.0
   (c) Provide a detail on how GIS can be used in biodiversity assessment. 4.0

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Course No: **IFM-502 (Elective)**, Course Title: Integrated Farm Management
Total Marks: 40, Time: 2 hours

Answer any **FOUR** questions. Illustrate your answer wherever necessary. Figure in the right margin indicates full marks.

1. (a) Mention the components of integrated farming systems. 2.0
   (b) How can governments provide support for the development of integrated aqua-farming system? 4.0
   (c) Draw and describe a model of integrated farming system. 4.0

2. (a) Describe the mutual benefits of rice and fish in integrated systems with scientific evidences. 3.0
   (b) Develop an energy flow model of integrated rice fish farming. 3.0
   (c) Briefly discuss about the pros and cons of integrated fish-horticulture farming in current context of Bangladesh. 4.0

3. (a) What factors should be considered during use of poultry waste in aquaculture? 2.0
   (b) "Integrated aqua farming system is an eco-friendly culture system or not?"- Justify. 3.0
   (c) How integration of livestock and fish improve the sustainability of farming systems? 5.0

4. (a) "Bio-security is part of bio-safety"- explain the statement. 2.0
   (b) Briefly describe about the requirements for a harmonized and integrated approach to bio-security. 4.0
   (c) Write down the bio-security risk in aquaculture with their best management practices. 4.0

5. (a) Describe pond management strategy in integrated livestock-fish farming system. 5.0
   (b) How will you reduce public health risks from pathogens in livestock-fish systems? 5.0

6. (a) List down the some common diseases in organic aqua farming with causative agent, symptom and treatment measures. 5.0
   (b) How is an ecosystems approach to aquaculture (EAA) implemented? 5.0

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Course No: **RFM-502 (Compulsory)**, Course Title: Riverine Fisheries Management
Total Marks: 40, Time: 2 hours

Answer any **FOUR** questions. Illustrate your answer wherever necessary. Figure in the right margin indicates full marks.

1. (a) ''Rivers are an important energy source''- Justify this statement. 3.0
   (b) Enlist 5 commercially important shrimp species in Bangladesh with their common name and scientific name. 3.0
   (c) Discuss the significance of non piscine fishery resources to boosting the economy of Bangladesh. 4.0

2. (a) How much aquatic biomass is lost to "ghost fishing" and what is the most effective way to reduce this source of mortality? 5.0
   (b) Discuss management strategy to prevent illegal, unreported and unregulated harvesting in marine ecosystems. 5.0

3. (a) How does change of ocean current and river flow affect the migratory performance and larval recruitment dynamics of fish? 5.0
   (b) Write down relative impact of different types of aquatic barriers and infrastructure on fish migration patterns and survival. 5.0

4. (a) "The major carp spawn fishery in the Halda river is intensive but inefficient"- explain it. 3.0
   (b) Mention basic environmental requirements for major carp spawn fishery. 3.0
   (c) Discuss the present status of major carp resource in terms of environmental changes and habitat modifications. 4.0

5. (a) Develop a model of cage aquaculture in river. 4.0
   (b) Discuss possible problems to manage cage aquaculture in rivers and provide possible recommendation to overcome those problems. 6.0

6. (a) Relate between government management and local participation in participatory management. 4.0
   (b) How can fisheries conservation management systems become more responsive to changes in distributions of fish stocks and their connectivity? 6.0

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Course No: **CBM-502 (Elective)**, Course Title: Community Based Fisheries Management
Total Marks: 40, Time: 2 hours

Answer any **FOUR** questions. Illustrate your answer wherever necessary. Figure in the right margin indicates full marks.

1.	(a)	Define community based fisheries management.	3.0
	(b)	Discuss the requirement of development of successful CBFM in Asian countries.	3.0
	(c)	Identify and discuss 3 challenges of implementing CBFM in the context of Bangladesh fisheries management.	4.0
2.	(a)	"CBFM is slightly easier in small fisheries with clear boundaries"- Justify this statement.	2.0
	(b)	Illustrate CBFM modeling in coral reef fishers' communities in Bangladesh.	4.0
	(c)	Relate among GO-NGOS-Fisherman in CBFM modeling.	4.0
3.	(a)	What does "TURF" stands for? Mention some benefits of it.	2.0
	(b)	Elaborate your understandings regarding ownership of waters and land.	4.0
	(c)	Write down the conflict of CBFM with local power groups. How will you mitigate those conflicts?	4.0
4.	(a)	Enlist 5 GOs and 5 NGOs working for CBFM in Bangladesh.	3.0
	(b)	How GOB and private initiatives support developing a CBFM model?	7.0
5.	(a)	Compare and contrast between impact on FCD and FCDI in fisheries.	5.0
	(b)	Briefly describe the options for integration of fisheries development components with FCDI projects.	5.0
6.	(a)	Illustrate possible time path of changing roles in fishery co-management through CBFM.	5.0
	(b)	Explain the linkage among fish, fisheries and communities along water bodies.	5.0