

Chittagong Veterinary and Animal Sciences University, Chittagong

Faculty of Fisheries

Department of Marine Bioresource Science

Master of Science in Marine Bioresource Science, July-December Semester Final Examination' 2018

Course No: **MBC-502 (Elective)**, Course Title: Marine Biogeochemistry

Total Marks: 40, Time: 2 hours

Answer any **FOUR** questions. Illustrate your answer wherever necessary.

1. What do you mean by marine biogeochemistry? Discuss the importance and scope of marine biogeochemistry. Discuss about the future aspects of marine biogeochemistry 2+4+4
2. What do you mean by biogeochemical cycle? Discuss about the major features of nitrogen and Sulphur cycle in marine environment. 2+4+4
3. What do you mean by ocean acidification? Discuss about the causes and impacts of ocean acidification on marine ecosystem. Formulate your recommendation to minimize the ocean acidification and its impacts on marine ecosystem. 2+5+3
4. Discuss in detail how organic matters are produced and decomposed in the oceanic environment. 10
5. What do you mean by marine carbon cycle? Discuss about the three main processes (or pumps) that make up the marine carbon cycle. Diagrammatically show the oceanic process of carbon flow in marine environment. 2+4+4
6. What do you mean by global climate change? What are the main causes of global climate change? Mention the five critical global environmental changes that happens due to global climate change. Discuss the role of the ocean carbon cycle in climate changes. 2+2+2+4

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Course No: **MBT-502 (Compulsory)**, Course Title: Marine Biotechnology

Total Marks: 40, Time: 2 hours

Answer any **FOUR** questions. Illustrate your answer wherever necessary.

- 1 a) What do you mean by Blue Biotechnology, Red Biotechnology, Green Biotechnology and White Biotechnology? 4.0
c) What do you mean by Bioethics? Mention the scope and principles of bioethics in marine biotechnology. 6.0
2. a) Enlist the major marine toxin groups, syndrome and their responsible algae from marine environment. 4.0
b) What are carotenoids? Mention the major sources of marine carotenoids. 3.0
c) What is chitin? Mention the agricultural and industrial uses of chitin. 3.0
- 3 a) Enlist the names of antibiotics derived from marine bacteria and marine algae? 3.0
b) What do you mean by algal biotechnology? Discuss the biotechnological importance of marine algae. 4.0
c) What do you mean by alginates? Mention the sources of alginates from marine environment. 3.0
- 4 a) What is Agar? Discuss about the properties and processing technology of agar from marine red algae? 6.0
b) What is single cell protein? Discuss about the production technique of single cell protein from the marine microbes. 4.0
- 5 a) What do you mean by cryopreservation? How this technique can be helpful for marine fish breeding? 3.0
b) Discuss about the detail procedure of cryopreservation techniques for marine fish breeding. 7.0
- 6 a) What do you mean by PCR? Describe about the principle, component, procedure and application of PCR in marine biotechnology 10.0

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Course No: MCM-502 (Compulsory), Course Title: Marine Resources Conservation & Management

Total Marks: 40, Time: 2 hours

Answer any FOUR questions. Illustrate your answer wherever necessary.

- 1 a) Discuss about the present status of major coastal and marine fisheries resources of Bangladesh? 5.0
b) Discuss about the various major approaches that are commonly used for marine fisheries conservation. 5.0
2. a) What do you mean by Marine Protected Areas? How can you conserve marine biodiversity outside of these protected areas? 3.0
b) Mention the common methods for measuring the marine biodiversity. Discuss about the major issues of marine biodiversity loss in the context of Bangladesh. 7.0
- 3 a) Compare about the benefits and limitation of different management tools commonly used in marine fisheries management? 6.0
b) Discuss the major issues of using MSBN and ESN in coastal and marine waters of Bangladesh. 4.0
- 4 a) Discuss about the present status of sanctuaries of hilsha for its conservation and management in Bangladesh. 4.0
c) Discuss about present strategies for hilsa fisheries management in Bangladesh. Give your opinion and recommendation for further improvement of hilsa fisheries management in Bangladesh. 6.0
- 5 a) Discuss about the present status with special emphasis of major issues and challenges of artisanal fisheries management of the Bay of Bengal. 7.0
b) What do you mean by gear selectivity? How can you make a non-selective gear to a selective gear? 3.0
- 6 a) What do you mean by ecosystem based fisheries management? Discuss about the various key elements of ecosystem based fisheries management. 6.0
b) What do you mean by community based fisheries management? Mention the strength and weakness of CBFM. 4.0

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Course No: MLP-502 (Elective), Course Title: Marine Laws and Policy

Total Marks: 40, Time: 2 hours

Answer any FOUR questions. Illustrate your answer wherever necessary.

- 1 a) What do you mean by territorial sea and international water? 3.0
b) What do you mean by contiguous zone and maritime zone? Discuss about the maritime zones of Bangladesh. 7.0
2. What is legal regime. Discuss the main features of legal regimes of continental shelf and high sea. 10.0
- 3 a) What do you mean by Marine Functional Zone and Exclusive Economic Zone? 3.0
b) What is delimitation? What are the principles and methods of delimitation? Discuss about the delimitation of the EEZ. 7.0
- 4 a) What do you mean by Marine Protected Areas? What are the importance of MPA? 4.0
b) Discuss about various laws and policies associated with the protection of MPA. 6.0
- 5 a) What is straight baseline? Discuss the legal background of straight line of Bangladesh. 6.0
b) Discuss about the rights, jurisdiction and duties of the coastal state in the EEZ. 4.0
- 6 a) What is Innocent Passage according to the United Nations Convention on the Law of the Sea? 4.0
b) Discuss about the legal regime of deep seabed. 6.0

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Course No: **CMP-502 (Compulsory)**, Course Title: Coastal and Marine Pollution
Total Marks: 40, Time: 2 hours

Answer any **FOUR** questions. Illustrate your answer wherever necessary.

- 1 a) What do you mean by the terms marine pollutant and pollution? 2.0
b) What are the common ecotoxicants mostly available in marine environment? 2.0
c) Discuss about the various sources and causes of coastal and marine pollution. 6.0
2. a) What do you mean by ballast water and bilge water? 2.0
b) Discuss the impacts of marine pollution from the industrial effluents. Discuss how can you control their impacts on marine environment in the context of Bangladesh. 8.0
- 3 a) What are heavy metals? What are the sources of heavy metals in marine environment? 3.0
b) Why heavy metals are called highly toxic elements? 2.0
c) Describe bioaccumulation and bio-magnification process of heavy metals in marine food chain. 5.0
- 4 a) What are the importance of environmental impact assessment? 2.0
b) Mention the major guiding principles of EIA developed by International Association for Impact Assessment? 4.0
c) Briefly describe the five stages of EIA procedure. 4.0
- 5 a) What do you mean by the term bio-indicator and bio-marker? 2.0
b) What are the essential criteria to select biomarker and bioindicator of marine pollution. 3.0
b) Discuss about the various physico-chemical assessment procedure of marine pollution. 5.0
- 6 a) Briefly discuss about the present coastal zone scenario of Bangladesh in the context of coastal pollution? 5.0
c) Formulate your plan to reduce the marine pollution derived from the present coastal zone activities. 5.0

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Course No: **BOC-502 (Compulsory)**, Course Title: **Biological Oceanography**

Total Marks: 40, Time: 2 hours

Answer any **FOUR** questions. Illustrate your answer wherever necessary.

- 1 a) What are the major groups of zooplankton found in marine environment? Discuss about the various factors affecting the distribution of zooplankton in marine environment. 6.0
- b) Discuss about the ecological and trophic importance of zooplankton in marine environment. 4.0
2. a) What do you mean by the demersal fish? Discuss about the major fishing ground of the Bay of Bengal 6.0
- b) Discuss about the various environmental factors that influence the fish migration. 4.0
- 3 a) What do you mean by fishing tactics and fishery forecasting? 2.0
- b) Discuss how can you identify and locate unexplored fishery resources of ocean environment. 4.0
- c) Briefly discuss about various indirect methods that can be used to explore new fishing grounds. 4.0
- 4 a) What do you mean by the productivity of marine environment? 3.0
- b) Discuss about the various methods and techniques that can be used to measure the primary productivity in marine environment. 7.0
- 5 a) What do you mean by eutrophication? How marine dinoflagellates is related with the eutrophication in marine environment? 4.0
- b) Discuss about the impact of eutrophication on the marine environment and human health. 6.0
- 6 a) Discuss about the diversity of benthic animals in marine environment. 5.0
- b) Discuss about the impacts of ocean acidification on marine organisms. 5.0