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' 2017
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)	What do you mean by marine resource conservation and marine resource management?	2.0
	b)	Why do we need to conserve and manage our marine resources?	2.0
	c)	What are the present issues and challenges of our marine resource conservation and management? Discuss about the various approaches and procedure of marine resource conservation and management.	6.0
2.	a)	What are the major threats of biodiversity conservation of our Bay of Bengal?	2.0
	b)	"Maintaining marine protected areas is an important approach of marine biodiversity conservation"-Explain the statement.	2.0
	c)	How can you conserve marine biodiversity at outside marine protected areas.?	3.0
	d)	Discuss about various international agreements regarding biodiversity conservation.	3.0
3	a)	What do you mean by input control and output control in marine fisheries management?	2.0
	b)	Discuss the major issues and challenges of implementing input control and output control of artisanal fisheries of Bay of Bengal in Bangladesh.	4.0
	c)	Discuss the major issues of using MSBN and ESBN in coastal and marine waters of Bangladesh.	4.0
4	a)	Properly mention the name, area boundary and ban periods of five nursery grounds of hilsha for its conservation and management in Bangladesh.	3.0
	b)	Briefly discuss and illustrate the life cycle of *Hilsha illisha*. Why understanding life cycle of hilsha is important for its management?	4.0
	c)	Briefly discuss about basic conservation technique and policy recommendation for Hilsha fisheries management in Bangladesh.	3.0
5	a)	Define EBFM. Sketch an informative model of EBFM which include various dimension of fisheries management.	4.0
	b)	Why EBFM is considering as one of the best management strategies for marine fisheries management?	2.0
	c)	Discuss about the major challenges of implementing EBFM in coastal and marine fisheries of Bangladesh.	4.0
6	a)	Define FAO code of conduct for responsible fisheries with its nature and scope?	3.0
	b)	What are the prohibited method of fishing according to the FAO code of conduct for responsible fisheries?	2.0
	c)	Describe the main features of fishing regulation of Marine Fish Ordinance 1983 of Bangladesh	3.0
	d)	List down the names of rules and regulation or law related with Bay of Bengal.	2.0

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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 do you mean by benthic biodiversity?	1.0
	b)	Describe the role of benthic organisms in nutrient flow and EPS formation in marine ecosystem.	4.0
	c)	Discuss about the distribution of benthic community in the ocean floor.	5.0
2.	a)	What do you mean by fish migration? Describe the environmental factors that influence the fish migration.	4.0
	b)	What do you mean by straddling stock?	2.0
	c)	Describe about the major fishing ground of Bay of Bengal.	4.0
3	a)	What do you mean by fisheries oceanography?	2.0
	b)	Describe how can you detect new fishing ground in Bay of Bengal.	4.0
	c)	Discuss the role of remote sensing in ocean fishing.	4.0
4	a)	Describe how physico-chemical processes influence abundance and distribution of living organisms in the oceanic environment	10.0
5	a)	How can you classify the benthic organism of marine environment?	2.0
	b)	Briefly describe the physical and biological factors affecting the distribution of benthic communities.	8.0
6	a)	What do you mean by blast water plankton? Discuss about the diversity of blast water plankton.	4.0
	b)	Describe different procedures of measuring productivity of marine plankton.	6.0

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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	a)	"The Ocean is the sink for atmospheric CO2"-Explain the statement.	2.0
	b)	Describe the carbonate chemistry. How carbonate chemistry is related with the ocean acidification?	3.0
	c)	What are the causes, effects and possible solution of ocean acidification?	5.0
2.	a)	What do you mean by biogeochemical cycle?	1.0
	b)	Although nitrogen is 48% of the sea water, why still nitrogen is limiting factor for marine plankton?	2.0
	c)	Discuss about the carbon cycle of marine environment.	4.0
	d)	Briefly explain the five steps of nitrogen cycle of marine environment.	3.0
3	a)	What is nitrogen fixation? Describe non-biological and biological nitrogen fixation.	4.0
	b)	Describe how ocean acidification affects the nitrogen fixation and primary production of marine environment.	3.0
	c)	What is the red-field ratio? What are the two mutually non-exclusive mechanisms proposed by Redfield ratio?	3.0
4	a)	Write down the names and chemical formulas for some of the important rock forming minerals.	2.0
	b)	How similar the chemical composition of present day seawater to the past oceans seawater?	3.0
	c)	What do you mean by the term accretion and bioturbation? Describe the role of bioturbation in marine biogeochemistry?	5.0
5	a)	What do you mean by sea and air interaction?	2.0
	b)	Describe the mechanism of El Nino and La-Nina with their impacts on weather conditions.	5.0
	c)	What are the environmental and economic impacts of increasing ocean surface temperature?	3.0
6	a)	How erosion of sediment is related with marine biogeochemistry?	2.0
	b)	Describe the four major process that play an important role in the erosion process of the sediment.	3.0
	c)	Describe the important steps of the transportation of sediment in oceanic environment.	5.0

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

Total Marks: 40, Time: 2 hours

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

1	a)	What do you mean by marine stock enhancement?	1.0
	b)	Describe the significance of marine stock enhancement in marine fisheries?	3.0
	c)	Describe the 15 elements of marine stock enhancement.	6.0
2.	a)	Describe the reproductive behavior observed in marine fish stock	3.0
	b)	Discuss briefly the diversity of hermaphroditism observed in marine fish stock.	3.0
	c)	Describe the spawning strategies of marine fish stock.	4.0
3	a)	What do you mean by sea ranching? What are the characteristic features and suitable species of sea ranching?	2.0
	b)	Describe the different types of sea ranching for marine fisheries.	4.0
	c)	What do you mean by MPA? Discuss about the basic protocol of MPAs.	4.0
4	a)	What do you mean by *in situ* and *ex situ* genetic conservation for marine stock enhancement?	2.0
	b)	What do you mean by live gene banking and cryogenic gene banking? Give the examples of these gene banking in different parts of the world.	3.0
	c)	Describe the procedure of maintaining a live gene bank of marine fish stock.	5.0
5	a)	What is MPA network? Why do we need MPA network?	2.0
	b)	Briefly discuss about the socio-economic impact of MPAs.	3.0
	c)	What is habitat restoration? Describe the conceptual diagram to illustrate the elements of restoration management and monitoring.	5.0

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Master of Science in Marine Bioresource Science, July-December Semester Final Examination' 2017

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 ecotoxicology?	1.0
	b)	List the name of common ecotoxicants with their possible sources in coastal and marine pollution.	4.0
	c)	Discuss about the detection procedure of ecotoxicants from coastal and marine ecosystem.	5.0
2.	a)	What do you mean by point and non-point sources of coastal pollution?	2.0
	b)	What do you mean by ballast water and bilge water?	2.0
	c)	Describes the pollutants discharged from shipbreaking activities and its impact on coastal and oceanic ecosystem.	6.0
3	a)	Describe bioaccumulation and bio-magnification process of heavy metals in marine food chain.	4.0
	b)	What are the major sources of oil pollution of marine ecosystem? Describe the process and techniques that can be used to control the oil pollution of marine ecosystem?	6.0
4	a)	What do you mean by environmental impact assessment?	2.0
	b)	What do you mean by integrated environmental risk assessment?	2.0
	c)	Describe the different stages of environmental risk assessment process.	6.0
5	a)	What do you mean by pollution monitoring and assessment?	2.0
	b)	Describe the physico-chemical and biological assessment system of coastal and marine pollution.	8.0
6	a)	What do you mean by black water and grey water?	2.0
	b)	Discuss the impact of aquaculture on coastal and marine ecosystem.	5.0
	c)	Formulate your plan to reduce the aquaculture impacts on coastal and marine pollution.	3.0

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Master of Science in Marine Bioresource Science, July-December Semester Final Examination' 2017

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 Marine Biotechnogy?	1.0
	b)	How can you apply biotechnological knowledge in the field of developmental biology of marine fish.	4.0
	c)	Discuss about the application of biotechnology in disease diagnosis, prevention and control of marine organisms.	5.0
2.	a)	What do you mean by marine bioactive compounds? What are the significance of marine bioactive compounds?	3.0
	b)	How can you isolate and identify marine bioactive compounds?	4.0
	c)	List down the names of promising antibiotics derived from marine bacteria and fungi.	3.0
3	a)	What are the biotechnological importance of marine algae?	2.0
	b)	What are the important marine derived hydrocolloids?	2.0
	c)	Discuss about the properties, production procedure and application of marine derived alginates.	6.0
4	a)	What is carrageenan? What are the different commercial classes of carrageenan available in the market?	2.0
	b)	Discuss about the industrial, pharmaceuticals and biotechnological application of the carrageenan.	3.0
	c)	Discuss about the agar production techniques from the marine red algae.	5.0
5	a)	Discuss how chromosomal manipulation can be applied in mariculture.	4.0
	b)	What do you know about polyploidy and transgenesis? Describe various methods in the production of marine transgenic fish.	6.0
6	a)	What do you mean by ELISA? Describe the principles and application of ELISA in the area of marine biotechnology.	4.0
	b)	What do you mean by FISH? Describe the procedure, advantages and application of FISH technique in marine biotechnology.	6.0