Chittagong Veterinary and Animal Sciences University, Chittagong

Faculty of Fisheries

Department of Fisheries Resource Management

Master of Science in Fisheries Resource Management, January-June Semester Final Examination' 2018

Course No: **RCD-501 (Compulsory)**, Course Title: Research Methods, Concept and Design

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)	Why conducting census is impractical in biological research?	**2.0**
	b)	What is standard deviation? Give a proper interpretation of it with example.	**3.0**
	c)	Write down the scopes of fundamental research in biological science.	**5.0**
2.	a)	What do you understand regarding 'statistical tools'?	**2.0**
	b)	When do you use non parametric methods in estimating population mean? Explain with example.	**3.0**
	c)	Give a detail outline on F-test in data analysis of a research.	**5.0**
3.	a)	What do you mean by 'predictor' and 'response' variables?	**2.0**
	b)	How do you select a catchy and attractive title for your research?	**3.0**
	c)	Mention the appropriate ways of writing an abstract.	**5.0**
4.	a)	Differentiate normal curve and standard normal curve?	**2.0**
	b)	Name a research step by which a problem can be solved? What does it lead to?	**3.0**
	c)	How can you obtain the appropriate significance level for a research? Explain with example.	**5.0**
5.	a)	What are the fundamentals part of a research proposal?	**2.0**
	b)	How will you select objectives for your research?	**3.0**
	c)	Write in details about the peer reviewing process of a scientific article.	**5.0**
6.	a)	What do you know about 'visual evaluation' in participatory studies?	**2.0**
	b)	How obtained results in observational studies can supplement a controlled experiment?	**3.0**
	c)	"Dogmatic nature of research team-leader can ruin every set-up of a sophisticated research."- Explain the statement.	**5.0**

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Course No: **ECF-501 (Compulsory)**, Course Title: Ecology of Fishes

Total Marks: 40, Time: 2 hours

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

1	a)	Explain fish aquatic ecosystems.	02
	b)	How food energy assimilated by a fish?	03
	c)	Briefly describe about the Brett energy budget equation with appropriate example.	05
2.	a)	Define following term: Fish Ontogeny, Egg stage, Flexion stage, Transitional stage	02
	b)	Briefly describe about the factors influencing the habitat shifting due to onthogenic changes.	03
	c)	How fishes try to avoid predators?	03
	d)	What do you know about the feeding habit of fish?	02
3	a)	Define migration. Why migration is needed for fish biology?	03
	b)	What happens to pond fish in winter?	02
	c)	Distinguish between hibernation and aestivation.	02
	d)	Write a schematic diagram of life cycle of hilsa shad.	03
4	a)	Define evolutionary ecology.	02
	b)	How ecology is related to evolution.	02
	c)	Explain the forces that drive evolution.	03
	d)	Shortly discuss the effects of evolutionary changes.	03
5	a)	Life history data is a management tool. Explained it on your point of view.	02
	b)	Classify fish species on the basis of manner of reproduction with example.	03
	c)	Distinguish between r and k selected species.	02
	d)	How match-mismatch hypothesis integrated with life history strategies.	03
6	a)	Briefly describe about the mode of reproduction.	03
	b)	How can hermaphrodites be recognized?	02
	c)	Briefly describe the factors which trigger the spawning.	05

Chittagong Veterinary and Animal Sciences University
M.S. in Fisheries Resources Management,
Course No. ALM 501 (T), Course Title: Advanced Limnology (Theory)
Jan-Jun Semester Final Examination/ 2018
Total Marks: 40, Time: 2 hours

Answer **any four** questions

1.	a.	Explain cyclomorphosis with examples.	4
	b.	Write an essay on physical and chemical factors and their effects on biological production.	6
2.	a.	What are the different forms of soil-water interaction?	2
	b.	How soil-water interaction influences productivity and water quality parameters?	2
	c.	Illustrate and explain Nitrogen cycle.	6
3.	a.	Differentiate between lentic and lotic environment.	2
	b.	Short note (any one): i) Silicon cycle ii)Carbon cycle	2
	c.	What do you know about seasonal succession of phytoplankton? Describe it with some examples.	6
4.		How do Bacteria and other microbes play role in aquatic productivity?	2
		Define vertical migration. What are the reasons and common types of it? Describe the pattern of vertical migration in cladocera and copepoda.	6
		Write a short note on phytoplankton-zooplankton relationship.	2
5.	a.	Write down the importance of periphyton in aquatic productivity.	2
	b.	What is eutrophication? How is it created? What are the effective control measures?	6
	c.	What are the major groups of benthic organisms?	2

Chittagong Veterinary and Animal Sciences University
M.S. in Fisheries Resources Management,
Course No. FSA 501 (T), Course Title: Fish Stock Assessment (Theory)
Jan-Jun Semester Final Examination/ 2018
Total Marks: 40, Time: 1 hours

Answer **any four** questions.

1. a. Define unit stock. Give an example. 2

   b. Explain the cubic relationship that exists between length and weight of fish. 2

   c. A depletion experiment on an isolated 24 km^2 stock of crab (*Scylla serata*) was run over 4 weeks. The number of crabs caught and the number of traps used per week are shown in the following table. Estimate the catchability coefficient and the initial exploitable stock size. 6

Week	Trap	Catch
1st	140	2274
2nd	183	2376
3rd	235	2734
4th	204	1836

2. a. What are the advantages of fast growth of animals? 2

   b. Estimate population parameters with the vonBertalanffy equation. 6

   c. Describe the stimuli for gonadal development. 2

3. a. Recruitment of fish is related to factors other than stock size- explain. 2

   b. What does L_m stands for? Define it. 2

   c. Estimate L_m of the following example of female tiger prawn (*Penaeus semisulcatus*) in the Bay of Bengal. 6

Total length (cm)	Total number in sample	Numbers ripe
12.5	109	5
13.5	73	7
14.5	42	10
15.5	48	21
16.5	312	158
17.5	458	215

4. a. What are the factors to be considered for selecting stock assessment tools? 2

   b. Describe Catch and Effort Data Analysis (CEDA) and Participatory Fisheries Stock Assessment (Par fish) as stock assessment tools. 6

   c. Write down the advantages and disadvantages of different stock assessment tools. 2

5. a. What factors allow an increased harvestable surplus in an exploitable stock? 4

   b. How do you develop the equations to estimate the MEY and fishing effort at it in surplus yield model? Give the necessary figure. 6

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Course No: **ASM-501 (Elective)**, Course Title: **Aquatic Soil 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)	What factors should you consider in managing an intensive aquafarm soil?	**3.0**
	b)	Elicit the feasibilities of soil based aquaculture in Bangladesh.	**7.0**
2.	a)	How do inherent fertility of a soil control the formation of its oxidized layer?	**3.0**
	b)	Develop a model of fundamental economics for the set-up of a soil based aquaculture industry.	**7.0**
3.	a)	Discuss the ways of nutrient enrichment in a sandy soils.	**3.0**
	b)	Provide a detail on the ways of visual evaluation of a soil texture.	**7.0**
4.	a)	How Electrical Conductivity (EC) of a soil can be determined?	**3.0**
	b)	Elaborate your understandings regarding nutrient exchange between soil and water.	**7.0**
5.	a)	Describe the significance of probiotics in controlling environmental hazards.	**3.0**
	b)	How can you efficiently manage soil quality of open water resources? - Discuss with possible complications.	**7.0**
6.	a)	Explain 'toxicity index' in aquatic soil with examples.	**3.0**
	b)	Illustrate an appropriate model of aquaculture in acid-sulphate soils after possible modification.	**7.0**

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Master of Science in Fisheries Resource Management, January-June Semester Final Examination' 2018

Course No: **AEC-501 (Compulsory)**, Course Title: Aquatic Ecology

Total Marks: 40, Time: 2 hours

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

1	a)	Define ecology.	02
	b)	Write down the scope of ecology.	03
	c)	Discuss about the several methods and approaches used in ecology.	05
2.	a)	Explain aquatic ecosystem.	02
	b)	Differentiate between lentic and lotic water body.	03
	c)	What is decomposition? Write down the requirement for efficient decomposition.	05
3	a)	Define climax community. Write down the characteristics of this.	03
	b)	What is the stability of an ecosystem?	02
	c)	Briefly discuss about the factors affecting of stability.	03
	d)	State the summary of Margalef concept.	02
4	a)	Define floodplains. Briefly describe about the energy flow of floodplain with an appropriate example.	04
	b)	Estuaries are considered as a high productive ecosystem. Explain this statement.	02
	c)	Define tidal marsh. Differentiate between marsh and swamp.	03
	d)	Why are salt marshes important to the environment?	01
5	a)	Define population density.	02
	b)	Why ecological density is more preferred to crude density in ecological study?	03
	c)	What are several factors that could be considered as environmental resistance?	02
	d)	Compare and contrast exponential and logistic growth curve.	03
6	a)	Write short note	4×2=8

I. Marine ecosystem
II. Ecological pyramid
III. Food chain and food web
IV. Habitat and niche

b) Secondary succession generally happens faster than primary succession. Why do you think this happens? 02