

Chattogram Veterinary and Animal Sciences University

Faculty of Fisheries

Department of Fisheries Resource Management

Master of Science in Fisheries Resource Management, January-June Semester Final Examination'
2023

Course Code: **RCD-501**, 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) Distinguish between research aims and objectives with example 2.0
(b) What are the common mistakes in writing research aims and objectives? 4.0
(c) How will you overcome the common mistakes in writing research aims and objectives? 4.0
2. (a) "Analysis of data is an integral part of the research process"- Justify this statement. 2.0
(b) Differentiate between 'conceptualization' and 'formulation' step. 4.0
(c) Discuss the benefits of "specification of universe of interest" in designing a research with examples. 4.0
3. (a) Differentiate between controlled experience studies and controlled Experiments. 4.0
(b) Describe briefly an experiment for example to be set in a laboratory of FoF, CVASU. 6.0
4. (a) How will you identify normally distributed population? 2.0
(b) State Chebychev's rule. What does Chebychev's rule say about the percentage of data that lies within 2 standard deviations of a data set? 3.0
(c) How will you choose research hypothesis in fisheries research? 5.0
5. (a) Categorize the level of stakeholder participation in participatory studies. 3.0
(b) How will you identify a study sites to conduct a socio-economic assessment study? 4.0
(c) Mention the importance of assessing secondary data to conduct a socio-economic assessment study. 3.0
6. (a) "The interpretations and conclusions from the study should be check against the original model"- explain this statement. 2.0
(b) Why data interpretation is important? 3.0
(c) Develop a structure of scientific report. 5.0

Chattogram Veterinary and Animal Sciences University

Faculty of Fisheries

Department of Fisheries Resource Management

Master of Science in Fisheries Resource Management, January-June Semester Final Examination' 2023

Course Code: FSA-501, Course Title: Fish Stock Assessment

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 selectivity of fishing gear. Illustrate graphically mesh selectivity curves for gill nets for both smaller and larger mesh sizes. 6.0
- (b) Why is weight measurement required for fisheries work? 2.0
- (c) What does the correlation coefficient and coefficient of determination express about two variables in linear relationship? 2.0

2. (a) Langerman conducted marking experiments on tigerfish (*Hydrocynus vittatus*) in Lake Kariba. In that experiment, 984 fish were tagged and released. After fishing, 3253 fish were caught of which 68 had tags. Make an estimate of absolute abundance of tigerfish in Lake Kariba. [$t = 1.96$] 6.0
- (b) Write down the assumptions of mark-recapture method. 4.0

3. (a) Define catch curve. 2.0
- (b) Compare and contrast between age-based catch curve and length-based catch curve. 6.0
- (c) Why are the initial data points not included in regression line in age based catch curve? 2.0

4. (a) Differentiate between synchronous and asynchronous ovary. 2.0
- (b) Estimate the mean length at sexual maturity (L_m) of the sample of female blue shrimp (*P. stylirostris*) in the California gulf. Using the following data. 6.0

| Total length(cm) | Total number in sample | Number ripe |
|------------------|------------------------|-------------|
| 15.5 | 48 | 21 |
| 16.5 | 321 | 158 |
| 17.5 | 458 | 215 |
| 18.5 | 771 | 396 |
| 19.5 | 535 | 280 |
| 20.5 | 180 | 85 |
| 21.5 | 29 | 18 |
| 22.5 | 1 | 1 |

- (c) "Only female ovaries are studied in fisheries work"- Explain. 2.0

5. (a) Define isometric growth. 2.0
- (b) Enlist the procedures for estimating parameters of Von Bertalanffy growth curve. 2.0
- (c) Following table shows the age and length for Silver pomfret population of the Bay of Bengal. Estimate the Von-Bertalanffy growth parameters K and L_∞ . 6.0

| Age (Year) | I | II | III | IV | V |
|-------------|----|----|-----|----|----|
| Length (cm) | 25 | 30 | 49 | 53 | 60 |

- a) Define GSI. How do you calculate GSI for both fish and abalone? 3.0
- (b) "Recruitment occur immediate after reproduction" – Argue with this statement. 2.0
- (c) Discuss stock recruitment relationship of Shepherd model when b values are 1, <1 and >1. 5.0

Chattogram Veterinary and Animal Sciences University
Faculty of Fisheries
Department of Fisheries Resource Management
Master of Science in Fisheries Resource Management, January-June Semester Final
Examination' 2023

Course Code: **ALM-501**, Course Title: Advanced Limnology

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 primary production and Enlist the factors affecting primary production. 2.0
(b) Describe the seasonal succession of phytoplankton. 4.0
(c) How is human affected by consumption of contaminated seafood? 4.0
2. (a) "Periphyton serves as an indicator of water quality"- explain. 2.0
(b) Why are fish attracted to Periphyton? 4.0
(c) Compare and contrast between Periphyton and benthos. 4.0
3. (a) Define Cyclomorphosis. Discuss Cyclomorphosis in zooplankton with necessary figure. 6.0
(b) Elaborate your understanding on the interrelation between phytoplankton and zooplankton in an aquatic environment. 4.0
4. (a) "Bacteria are an essential component of biogeochemical cycle"- Justify this statement. 4.0
(b) Illustrate Nitrogen cycle in an aquatic system. 6.0
5. (a) "Reclamation of derelict water bodies is impossible without limnological knowledge"-Justify. 3.0
(b) Explain the process of soil water interactions. 3.0
(c) Describe soil water interactions and their effects on productivity of water bodies. 4.0
6. (a) Write down the role of consumers in nutrient cycling in inland waters. 5.0
(b) How do limnological factors of lakes affect fisheries productivity of the lakes? 5.0

Chattogram Veterinary and Animal Sciences University

Faculty of Fisheries

Department of Fisheries Resource Management

Master of Science in Fisheries Resource Management, January-June Semester Final Examination' 2023

Course Code: ASM-501, 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) Differentiate between the two terms "Soil Clay" and "Humus". Draw and label a typical humus compound. 4.0
- (b) Discuss the soil textural classes in relation to their suitability for aquaculture, pond construction and fisheries management. 6.0
2. (a) "Two different soils having same pH can have different liming requirement."-Justify. 2.0
- (b) Illustrate the cation and anion exchange by plant root hair. 4.0
- (c) How does lime requirement depends on cation exchange capacity? 4.0
3. (a) "Bottom mud is the store-house of nutrients."- Justify the statement. 4.0
- (b) Criticize and recommend common open water bottom mud management techniques in Bangladesh. 6.0
4. (a) Differentiate between the "productivity" and "fertility" of a soil with examples. 2.0
- (b) How do you maintain appropriate fertility of a soil? 3.0
- (c) Compare and contrast how irrigation under arid and humid climates can influence soil salinity and sodicity. 5.0
5. (a) "All limiting conditions must be improved if yields are to be improved." Justify the statement in regarding the management of very sandy soils for aquaculture. 4.0
- (b) Mention the problems of clayey soils in constructing a fish pond. How the "use of organic matter" can be beneficial in solving such problem? 6.0
6. (a) Differentiate between actual acid sulphate soil and potential acid sulphate soil. 2.0
- (b) Why acid sulphate soils are generally concentrated in the coastal area? 3.0
- (c) Write down the management techniques of Acid Sulphate Soils. 5.0

Chattogram Veterinary and Animal Sciences University

Faculty of Fisheries

Department of Fisheries Resource Management

Master of Science in Fisheries Resource Management, January-June Semester Final
Examination' 2023

Course Code: **ECF-501**, Course Title: Ecology of Fishes

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) How food energy assimilated by a fish? 2.0
(b) Differentiate between lentic and lotic ecosystems. 3.0
(c) Briefly describe about the Winberg energy budget equation. 5.0
2. (a) Distinguish between inter and intra specific relationship pattern of fish. 4.0
(b) Briefly describe the different types of interrelationships among fishes and other biota in ecosystems with example. 6.0
3. (a) "Fish have a more spherical lens" –Explain this statement. 2.0
(b) How a fish sensory system helps to detect predators? 3.0
(c) Briefly describe about the factors influencing the habitat shifting due to onthogenic changes. 5.0
4. (a) Differentiate among oviparity, ovoviviparity and viviparity. 4.0
(b) How photoperiod and periodicity influence reproductive cycle of fish? 6.0
5. (a) Define aestivation. How does aestivation works? 3.0
(b) How do koi fish live in the winter? 2.0
(c) Briefly describe about the life cycle of freshwater eel with figure. 5.0
6. (a) Relate between ecology and evolution. 2.0
(b) Classify fish species on the basis of zones of habitats with example. 3.0
(c) How match-mismatch hypothesis integrated with life history strategies. 5.0

Chattogram Veterinary and Animal Sciences University

Faculty of Fisheries

Department of Fisheries Resource Management

Master of Science in Fisheries Resource Management, January-June Semester Final
Examination' 2023

Course Code: **AEC-501**, Course Title: Aquatic Ecology

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) Illustrate the level of integration found in ecology. 2.0
(b) A fisheries survey was carried out in the Halda River of Chattogram hill tracts in order to estimate biodiversity status. Which method is useful for conducting this study and briefly describe this method. 5.0
(c) Write down the scope of ecology. 3.0
2. (a) Enlist the Sources of nutrients in an ecosystem. 2.0
(b) Why do energy and biomass decrease at successive stages of the food chain? 2.0
(c) Briefly describe about the nutrient exchange process in an ecosystem. 6.0
3. (a) "Secondary succession generally happens faster than primary succession"- Justify this statement 3.0
(b) Is a forest area has been destroyed by a wild fire a primary or secondary succession? Briefly discuss this on your point of view. 4.0
(c) Climax concept considered as the end point of succession- Explain this statement 3.0
4. (a) Why is ecological density more preferred to crude density in ecological study? 2.0
(b) Compare and contrast between exponential and logistic growth curve. 5.0
(c) Define ecological ages of population. Why it is necessary to know the ratio of various age groups in the population? 3.0
5. (a) Compare Lake Fishery and Floodplain Fishery. 4.0
(b) Design and describe an energy flow model of floodplain ecosystem. 6.0
6. (a) Differentiate between marsh and swamp. 3.0
(b) Briefly describe the importance of salt marshes in the aquatic environment. 4.0
(c) How are organisms adapted in lotic habitat? 3.0