B.Sc. Fisheries (Hons.) Year -3 Semester -2 (July-December), Final Examination, 2020 Course No: ABC302 (T), Course Title: Aquatic Biodiversity and Conservation (Theory)

Full Marks: 70; Time: 3 hours

Answer <u>any 5 (five)</u> questions from each section. Figures in the right margin indicate full marks. Use separate answer script for each section.

| | | Section-A | | |
|-----|--|---|-------------------|---|
| 1. | a) b) c) | Define biodiversity. How 'species' and 'ecosystem' biodiversity are inter-linked with each other? Write down the economic and ecological importance of aquatic biodiversity. | 1.0 2.0 4.0 |) |
| 2. | a) b) c) | What is SIS? What are the threats in the natural habitats of SIS? Elucidate your suggestions to overcome the threats. | 1.0 2.0 4.0 |) |
| 3. | a)b)c) | Write down the goals of IUCN red-list. Differentiate "critically endangered" and "vulnerable" fishes with examples. Discuss the aspects that are usually taken into consideration for red-list preparation. | 1.5 2.5 3.0 | |
| 4. | a) b) | Why ex-situ conservation is called long-term conservation? –Discuss. Describe different in-situ ways of fisheries conservation. | 3.0 4.0 | |
| 5. | a)b)c) | What is trans-boundary protected areas? Differentiate 'national park' and 'wildlife sanctuaries'. What points should be considered before and after the establishment of a fish sanctuary? | 1.5 2.5 3.0 | |
| 6. | a)b)c) | What is a "protected area"? "Inland fishes are prodigy of a nation"- Justify. Illustrate the notified protected areas in the Bangladesh map. | 1.0 3.0 3.0 | |
| 7. | a)b)c) | How conservation is interlinked with biodiversity of a habitat? What is fisheries conservation? Write down its objectives. Why 'Tanguar haor' is called an ecologically critical area? | 2.0 3.0 2.0 | |
| | | Section B | | |
| 8. | a) b) | What do you mean by biodiversity hotspot? Give examples. What are the anthropogenic causes of aquatic biodiversity loss in Bangladesh? Provide your suggestions to overcome those causes. | 2.0 5.0 | |
| 9. | a) b) | Differentiate "exotic" and "invasive" fish with example. 'Exotic fishes are effective means of utilizing vacant niches' – to what extant you agree or disagree with this statement? | 2.0 | |
| 10. | a)b)c) | What do you mean by ecotourism? Enlist the ways of habitat alteration and loss due to human activities. Describe the FAO Code of Conduct for Responsible Fisheries. | 1.0 3.0 3.0 | |
| 11. | a) b) | Describe different levels of biodiversity. Discuss the value of biodiversity. | 3.0 4.0 | |
| 12. | a)b)c) | What is "Ramsar" site? Name the "Ramsar" sites of Bangladesh. Differentiate between "Vulnerable" and "Endangered" fish. What necessary actions would you undertake for "data deficient" species? | 2.0 2.0 3.0 | |
| 13. | a) b) c) | What is wildlife sanctuary? Distinguish between River and Beel. What are the activities one should not carry out in a government declared wildlife sanctuary? | 2.0 2.0 3.0 | |
| 14. | a) b) | What is ecosystem based management? Elaborate the factors should you consider before doing ecosystem based management plan. What are the benefits of ecosystem based management over other management tools? | 1.0 3.0 3.0 | |
| | | | | |

B.Sc. Fisheries (Hons.) Year -3 Semester -2 (July-December), Final Examination, 2020 Course No: MFM-302 (T), Course Title: Marine Fisheries Management (Theory)

Total Marks: 70, Time: 3 hours

Answer any 5 (five) questions from each section. Figures in the right margin indicate full mark. Use separate answer script for each section.

| | 1 3 | Section-A | |
|-----|--|--|-------------------|
| 1. | a) b) | Briefly state the pelagic fisheries resources of the Bay of Bengal. How would you implement the knowledge of marine fisheries management in fisheries sector? | 5.0 2.0 |
| 2. | a) b) | "Several indicators may signal unsustainable marine fisheries resource exploitation" - Explain. What do you know about MSBN and ESBN? Discuss the major issues related to MSBN and ESBN in the coastal waters of Bangladesh. | 2.0 5.0 |
| 3. | a) b) c) | What are the fundamental principles of EBFM? Discuss the ongoing EBFM plan and activities of Nijhum Dweep MPA of Bangladesh? Summarize the major challenges of implementing EBFM in coastal and marine fisheries of Bangladesh. | 2.0 3.0 2.0 |
| 4. | a)b)c) | Why understanding the life cycle of hilsa is essential for its management? Properly mention the name, area boundary and ban periods of nursery grounds of hilsa in Bangladesh. Discuss the impacts of implementing different hilsa project for sustainable management of hilsa? | 1.0 3.0 3.0 |
| 5. | a)b)c) | Diagrammatically show different types of marine water area/zonation used in marine fisheries management. What is straddling stock? Discuss the issues and challenges of transboundary fish stock management. Why IUU fishing activities are major threats to world marine fisheries? | 2.0 3.0 2.0 |
| 6. | a) b) | Mention the general principles of the FAO code of conduct for responsible fisheries. Discuss the main features of the Marine Fisheries Ordinance 1983. | 2.0 5.0 |
| 7. | Wri | te short notes on any 2 (Two) of the following: a) CBFM; b) MSY in fisheries management; c) Gear selectivity | = 7.0 |
| | | Section-B | |
| 8. | a) b) | Compare among the ecologically sensitive area, ecologically critical area, and marine protected area. Discuss the characteristic of major artisanal and industrial fishing gear used in the Bay of Bengal. | 3.0 4.0 |
| 9. | a) b) | How ECOPATH, ECOSIM, ECOSPACE and MPA tools can be implemented for successful EBFM?. "EBFM is a comprehensive approach of artisanal marine fisheries" – Explain the statement? | 2.0 5.0 |
| 10. | a) b) c) | How can you classify the major marine fishing regions of the world? Write down the name of the 19 major marine fishing areas covering the world ocean, and locate the fishing grounds of the Bay of Bengal? What do you mean by non-traditional fisheries? Mention the name of major non-traditional fisheries resources of the Bay of Bengal. | 2.0 3.0 2.0 |
| 11. | a) b) c) | Why effort and catch management should be implemented in marine fisheries? Discuss how can you impose fishing efforts and catch management in marine fisheries. Elaborate what kinds of problems arise in implementing fishing effort and catch management. | 2.0 2.0 3.0 |
| 12. | a) b) c) | Why is economic incentive necessary for the hilsa fisheries management of Bangladesh? Discuss the major features of the ongoing economic incentive-based hilsa management strategy of Bangladesh? Compare the ecological impact of regulatory and incentive-based hilsa fisheries management. | 2.0 3.0 2.0 |
| 13. | a) b) | What do you mean by inshore fisheries and offshore fisheries? Why is Bangladesh still far behind to exploit offshore fisheries resources? Discuss the major issues and challenges of implementing control measures of artisanal fisheries in the Bay of Bengal, Bangladesh. | 3.0 |
| 14. | | te short notes on any 2 (Two) of the following: Fishing ground of Bangladesh; b) SWOT analysis; c) Modern fishing techniques | 7.0 |

B.Sc. Fisheries (Hons.) Year-3, Semester-2 (July-December); Final Examination, 2020 Course No: MBE-302(T), Course Title: Molecular Biology and Embryology (Theory)

Full marks: 70; Time: 3 hours

Answer <u>any 05 (five)</u> questions from each section. Figures in the right margin indicate full marks. Use separate answer script for each section.

| 1. | a) b) | What are the key molecules of life? Define molecular biology. What are the scope and importance of molecular biology in biotechnological study? | 2.0 1.0 4.0 |
|-----|----------|--|-------------------|
| 2. | c) a) | "DNA cannot be synthesized anew"- justify. | 2.0 |
| | b) | Describe the mechanism of DNA replication with appropriate diagram. | 5.0 |
| 3. | a) | Why is gene regulation important? What are the gene regulatory differences between bacterium and fish? | 2.0 4.0 |
| | b) c) | | 1.0 |
| 4. | a) | "Operon regulation can be either negative or positive"- what is your opinion about the statement? | 3.0 |
| | b) | What types of regulation is occurred between RNA transcript and mRNA formation and how? | 4.0 |
| 5. | a) | Define fertilization. | 1.0 |
| | a) | What type of fertilization do fish have? | 1.0 |
| | b) | What does happen if two gametes interact with one another? | 5.0 |
| 6. | a) | What do you understand by organogenesis and metamorphosis? | 2.0 |
| | b) | Diagrammatically show the module of organ formation in fish. What is the germ layer? Prepare a list of organs which are formed from mesoderm. | 2.0 |
| 7 | c) | | |
| 7. | | Write down short notes (any TWO) on following: i) Urogenital system of female fish; ii) Genetic code; and iii) Protein synthesis | 7.0 |
| | | Section B | |
| 8. | a) | Briefly explain about promoter, introns, exons and TATA box? | 2.0 |
| | b) c) | "Cells can prevent resources from being wasted through gene regulation" explain the statement. Explain how mRNA is processed before it leaves the nucleus. | 2.0 3.0 |
| 9. | a) b) | What do you understand by gene expression and gene expression regulation? "Gene regulation may be directed at many of the steps in the pathway from DNA to RNA to protein"- Explain. | 2.0 5.0 |
| 10. | a) | What will happen if an egg is fertilized by more than one sperm? | 1.0 |
| | b) | "Calcium signaling plays a central role is the activation of the egg"- justify the statement. | 2.0 |
| | c) | How polyspermy can be prevented? Explain. | 4.0 |
| 11. | a) | What is transcription? | 1.0 |
| | b) | What are the requirements to start transcription? | 1.0 |
| | c) | Briefly describe the process of transcription in eukaryotes. | 5.0 |
| 12. | a) | Define embryo. | 1.0 |
| | b) | Classify eggs on the basis of amount and distribution of yolk. | 3.0 |
| | c) | What types of cleavage patterns are observed in fishes? | 3.0 |
| 13. | a) | What do you understand by neurulation? | 1.0 |
| | b) | List out the larval stages found in butterflies, marine invertebrates, coelacanths, frogs, crustaceans and fishes. | 2.0 |
| | c) | "Organogenesis begins with the development of the nervous system"- give your explanation. | 4.0 |
| 14 | | Write down short notes (any TWO) on following: i) Translation; ii) Gastrulation; and iii) Spermatogenesis | =7.0 |
| | | | |

B.Sc. Fisheries (Hons.) Year -3 Semester -2 (July-December), Final Examination, 2020 Course No: FPT-302 (T), Course Title: Fishery Products Technology (Theory)

Full Marks: 70; Time: 3 hours

Answer <u>any 5 (five)</u> questions from each section. Figures in the right margin indicate full marks. Use separate answer script for each section.

| 1. | a) b) | Briefly discuss the importance of "Fishery Product Technology" in Bangladesh. Prepare a list of fishery products that are marketed domestically in Bangladesh. | 3 4 |
|-----|--|---|-------------|
| 2. | a) b) c) | "Algae are not classified as plant."- Justify. Enlist 10 (ten) economically important seaweed species that are found in Bangladesh. Discuss the production procedure of a commercially important product prepared from red seaweed. | 2 2 3 |
| 3. | a) b) c) | Differentiate between kamaboko and 'Chikwa'. What types of fish species are suitable for fermentation? Why? Explain the production procedure of 'Shidhal' in Bangladesh. | 2 2 3 |
| 4. | a) b) | Is it possible to improve conventional smoking process? Justify your answer. What is smoking? Do you think cold smoke can preserve fish over hot smoke for a long time? Give your explanation. | 2 2 |
| | c) | Write down the processing method of dried shark fin rays. | 3 |
| 5. | a)b)c) | What are the differences between fish mince and surimi? Why fish mince is washed during surimi preparation? Briefly discuss the production process of surimi from fish with dark muscle. | 2 2 3 |
| | (| | 4 |
| 6. | a) b) | What is crab-leg analog? How can you prepare analog products from <i>surimi</i> ? Write down the production procedure of salmon canned products. | 3 |
| 7. | a) b) | Discuss a flow chart of fish oil extraction process from sardine. Differentiate between wet-rendering and dry-rendering process in fish meal production. | 3 |
| | | Section-B | |
| 8. | a) | Write down the principles of fish canning. Describe the common defects that are found in canned fish products. | 4 |
| | b) | Describe briefly the canning operation of tuna fish. | 3 |
| 9. | a) b) | What are the advantages of sun drying over the other drying methods? Discuss insect infestation, application of insecticides, blackening and red discoloration problems of dried fishery products. | 2 |
| | c) | Write the local name, common name and scientific name of 5 (five) marine fishes which are used to produce dried products in Bangladesh. | 2 |
| 10. | a) b) | Define seaweed. Write down the properties of agar, alginate and carrageenan. What are the major constraints of seaweed collection and its processing in Bangladesh? | 4 |
| 11. | a) | What do you mean by cold storage? | 1 |
| | b) | Illustrate different types of cold storage with their pros and cons which are commonly used in Bangladesh. | 4 |
| | c) | Mention the characteristics of a good cold storage. | 2 |
| 12. | a) | Write down the grading specification for seawater HLSO shrimp. | 2 |
| | b) | Write a flowchart of the preparation of pearl essence. | 2 |
| | c) | Write down the production process of fish meal by wet rendering method. | 3 |
| 13. | a) b) | How can you produce pesticide free dried fish? Describe microbiological spoilage of salted fishery products. | 4 |
| 14. | a) b) c) | Write short notes on any 2 (TWO) of the following: Chitin and Chitosan Fish sausage Isinglass | 7.0 |
| | | | |

B.Sc. Fisheries (Hons.) Year -3 Semester -2 (July-December), Final Examination, 2020 Course No: CCF302 (T), Course Title: Climate Change and Fisheries (Theory)

Full Marks: 70; Time: 3 hours

Answer <u>any 5 (five)</u> questions from each section. Figures in the right margin indicate full marks. Use separate answer script for each section.

| | | Section-A | |
|-----|--|--|-------------------|
| 1. | a)b)c) | What do you mean weather and climate? Differentiate between climate change and climate variability. What are the major factors responsible for climate change? | 2.0 2.0 3.0 |
| 2. | a) b) | Write down the major trends and forecasts for climate change in world's oceans. Explain the predicted changes and expected impacts of Sea Level Rise on coastal fisheries. | 4.0 3.0 |
| 3. | a) b) | What is ocean acidification? How is it related to climate change? Write down the potential socioeconomic impacts from ocean acidification on marine fisheries? | 3.0 4.0 |
| 4. | a) b) | Develop a comparison on the impacts of artisanal and marine fisheries due to climate change. "New challenges are emerging issues from current context of climate change on Fisheries governance" – Explain this statement. | 4.0 3.0 |
| 5. | a) b) | Write down the goal of 'Kyoto Protocol'. Discuss the effectiveness of this protocol as a successful international treaty in conserving the global climate. | 3.0 4.0 |
| 6. | a) b) | Differentiate between anticipatory and reactive adaptation response. How can you suggest potential adaptive responses in meeting any climatic disorder in Asia with special emphasize in the context of Bangladesh? | 2.0 |
| 7. | c)a)b) | Develop a model for planning adaptation response to negative climate in Bangladesh. How the 'values of aquaculture product' vary in different climatic regions of the world? Briefly describe the impacts of climate change on culture fisheries in current context of Bangladesh. | 3.0 3.0 4.0 |
| | | Section B | |
| 8. | a) b) c) | "Does temperature decreasing in winter season indicates global warming has stopped?" Mention the role of 'methane' as a green-house gas. Illustrate match-mismatch hypothesis of Cushing. | 2.5 1.5 3.0 |
| 9. | a) b) | "Climate change has capability to create cracks in the food chain" Explain. How 'species invasion and disease' can be linked with climate change? Explain. | 3.0 4.0 |
| 10. | a) b) | What do you mean by climate change adaptations? Describe the scope for adaptations of climate change on capture fisheries. | 2.0 5.0 |
| 11. | a) b) | Describe the potential positive impacts of climate change in fisheries sector. How does coastal aquaculture threaten biodiversity of wild populations? | 4.0 3.0 |
| 12. | a) b) c) | Point out the evidence that shows the climate is changing. Early warning is an anticipatory adaptation- Justify this statement. Discuss the impacts of climate change on livelihood of the fishing communities. | 2.0 2.0 3.0 |
| 13. | a) b) | What does 'IPCC' stands for? Enlist its aims. How IPCC reports can be beneficial in meeting the recent challenges to climate change across the globe? | 3.0 4.0 |
| 14. | | Write short notes on any 2 (two) of the following: a) Climate diplomacy; b) Aquaculture zoning; c) Copenhagen Declaration; | = 7.0 |

d) Oscillating control hypothesis.

B.Sc. Fisheries (Hons.) Year-3, Semester-2 (July-December); Final Examination, 2020

Course No: FPH-302(T), Course Title: Fish Pharmacology (Theory)

Full marks: 70; Time: 3 hours

Answer <u>any 05 (five)</u> questions from each section. Figures in the right margin indicate full marks. Use separate answer script for each section.

| | | Section-A | 2 |
|-----------|--|---|---|
| Ι. | a) b) | Define pharmacology, pharmacodynamics and pharmacokinetics. Write down the scope of fish pharmacological study in aquaculture? | 4 |
| 2. | a) b) c) | What are the sources of aqua drugs? Categorize aqua drugs available in Bangladesh based on their purpose of uses. Write down the principles of using aqua drugs. | 2 3 2 |
| 3. | a)b)c) | What are the causes of disease outbreak in aquatic animals? Highlight the sources of drugs and medicine that are used to treat aquatic animals. What are the differences between drug and medicine? | 2 3 2 |
| 4. | a) b) | Enlist 5 aqua medicinal products available for induced breeding in Bangladesh. What is the possible impact of using them in brood fish? Write down the name of some commercial steroids and estrogens that are used in sex reversal with their target fish species. | |
| 5. | a) b) | What do you mean by dose response and withdrawal period? Write down the mechanisms of drug resistance in aquatic animals. | 3 |
| 6. | a) b) | What do you mean by antibiotic susceptibility? Write down the steps of antibiotic susceptibility test. Briefly describe diagnostic techniques, prevention and control measures of a common bacterial and a fungal disease of Bangladesh. | 4 3 |
| 7. | | Write down short notes any 02 (TWO) on following: i) Half-lives and dosages of FDA recommended antibacterial for fish; ii) Drug laws; iii) Therapeutic index; and iv) Vaccination for fish health management | 2=7 |
| | | in a more position in a real real real real real real real re | |
| | | Section B | |
| 8. | a) b) | | 3 |
| 8. 9. | | Section B Briefly explain the abuse of aqua drugs and its effect in Bangladesh? Illustrate dose-response relationships in case of aquaculture drug use. What do you mean by routes of drug administration? Enlist the factors that may affect the routes of drug administration. | 3 4 2 |
| | b) a) | Section B Briefly explain the abuse of aqua drugs and its effect in Bangladesh? Illustrate dose-response relationships in case of aquaculture drug use. What do you mean by routes of drug administration? Enlist the factors that may affect the routes of | 3 4 2 5 |
| 9. | b)a)a) | Section B Briefly explain the abuse of aqua drugs and its effect in Bangladesh? Illustrate dose-response relationships in case of aquaculture drug use. What do you mean by routes of drug administration? Enlist the factors that may affect the routes of drug administration. Illustrate different types of local routes of drug administration. What are the main characteristics of ideal anaesthetics? | 3 4 2 5 2 5 2 3 2 |
| 9. | b) a) b) a) b) b) | Section B Briefly explain the abuse of aqua drugs and its effect in Bangladesh? Illustrate dose-response relationships in case of aquaculture drug use. What do you mean by routes of drug administration? Enlist the factors that may affect the routes of drug administration. Illustrate different types of local routes of drug administration. What are the main characteristics of ideal anaesthetics? List down 10 anaesthetic agents with their effective concentration and target fish species. What do you know about extra-label drug use? What are the general conditions that must be true before extra-label drug use? | 3 4 2 5 2 3 2 3 4 |
| 9. 10. | b) a) b) a) b) c) a) | Section B Briefly explain the abuse of aqua drugs and its effect in Bangladesh? Illustrate dose-response relationships in case of aquaculture drug use. What do you mean by routes of drug administration? Enlist the factors that may affect the routes of drug administration. Illustrate different types of local routes of drug administration. What are the main characteristics of ideal anaesthetics? List down 10 anaesthetic agents with their effective concentration and target fish species. What do you know about extra-label drug use? What are the general conditions that must be true before extra-label drug use? List down 10 aqua drugs that are prohibited from being extra-labeled for food-animals. Differentiate chemotherapeutics and aqua drugs? | 5 2 3 2 3 4 |

B.Sc. Fisheries (Hons.) Year -3 Semester -2 (July-December), Final Examination, 2020 Course No: AEN 302 (T), Course Title: Aquaculture Engineering (Theory)

Full Marks: 70; Time: 3 hours

Answer <u>any 5 (five)</u> questions from each section. Figures in the right margin indicate full marks. Use separate answer script for each section.

| 2 | | | |
|------------------|---|--|---|
| 1. | a. b. | Classify the aquaculture systems based on the intensity of culture. In 1-acre fish pond, a farmer wants to stock different layer fish maintaining a ratio of Rui: | 2 |
| | | Catla: Mrigal: Silver carp: Grass carp: Prawn = 30:35:15:5:5:10. What will be the stocking density of each fish species? (Pond depth=4ft) | 5 |
| 2. | a. | "Different types of factors need to be considered in site selection for aquaculture project." - Explain. | 4 |
| | b. | Illustrate a modern shrimp hatchery layout with cost-benefit analysis for Bangladesh perspective. | 3 |
| 3. | a. b. | | 2 5 |
| 4. | a. b. | Discuss the components of a marine fish hatchery setup. Among Biofloc, Raceway and RAS, which one is more preferable in our country? Why? | 4 3 |
| 5. | a. b. | Why wastewater treatment from different culture system is important in Bangladesh? Briefly describe the waste management system of re-circulatory aquaculture system. | 2 5 |
| 6. | a. b. | Explain water flow through channel, pipe and sluice gate. Briefly discuss about the principles of engineering in aspect of fish-farm construction. | . 2 5 |
| 7. | | Write short notes on any <u>02 (two)</u> of the following: i) Raceway aquaculture system, ii) Integrated aquaculture system and iii) Marine cage culture | 3.5x2=7 |
| | | Section B | |
| | | | |
| 8. | a. b. | Briefly describe the essential components of fish hatchery Calculate the volume of the outdoor tank for a small hatchery with an annual requirement of 4 million two-day old larvae of seabass consider the average female fecundity at 12000 per kg body weight and average individual weight at 1.25 kg. For male average weight will be 0.8 kg, sex ratio should be 2:1 (D should be 1 kg/m³ large earthen pond, 5 kg/m³ is smaller plastic pond). | |
| 8. 9. | b. a. | Calculate the volume of the outdoor tank for a small hatchery with an annual requirement of 4 million two-day old larvae of seabass consider the average female fecundity at 12000 per kg body weight and average individual weight at 1.25 kg. For male average weight will be 0.8 kg, sex ratio should be 2:1 (D should be 1 kg/m³ large earthen pond, 5 kg/m³ is smaller plastic pond). Explain how does Biofloc technology boost the aquaculture production? | |
| | b. | Calculate the volume of the outdoor tank for a small hatchery with an annual requirement of 4 million two-day old larvae of seabass consider the average female fecundity at 12000 per kg body weight and average individual weight at 1.25 kg. For male average weight will be 0.8 kg, sex ratio should be 2:1 (D should be 1 kg/m³ large earthen pond, 5 kg/m³ is smaller plastic pond). Explain how does Biofloc technology boost the aquaculture production? Discuss the cost-benefit analysis of the biofloc technology in Bangladesh perspective. Analyze cost benefit for an Integrated RAS, Raceway and Biofloc farm in 5 acres, with | 3 4 |
| 9. | b. a. b. | Calculate the volume of the outdoor tank for a small hatchery with an annual requirement of 4 million two-day old larvae of seabass consider the average female fecundity at 12000 per kg body weight and average individual weight at 1.25 kg. For male average weight will be 0.8 kg, sex ratio should be 2:1 (D should be 1 kg/m³ large earthen pond, 5 kg/m³ is smaller plastic pond). Explain how does Biofloc technology boost the aquaculture production? Discuss the cost-benefit analysis of the biofloc technology in Bangladesh perspective. Analyze cost benefit for an Integrated RAS, Raceway and Biofloc farm in 5 acres, with payback period and Break-even point What are the key characteristics of a monk? Why dam height, thickness and side slopes should be considered during pond construction? | 3 4 |
| 9. 10. | a. b. a. | Calculate the volume of the outdoor tank for a small hatchery with an annual requirement of 4 million two-day old larvae of seabass consider the average female fecundity at 12000 per kg body weight and average individual weight at 1.25 kg. For male average weight will be 0.8 kg, sex ratio should be 2:1 (D should be 1 kg/m³ large earthen pond, 5 kg/m³ is smaller plastic pond). Explain how does Biofloc technology boost the aquaculture production? Discuss the cost-benefit analysis of the biofloc technology in Bangladesh perspective. Analyze cost benefit for an Integrated RAS, Raceway and Biofloc farm in 5 acres, with payback period and Break-even point What are the key characteristics of a monk? Why dam height, thickness and side slopes should be considered during pond construction? What are the components of a cage? | 3 4 |
| 9. | a.b.a.a. | Calculate the volume of the outdoor tank for a small hatchery with an annual requirement of 4 million two-day old larvae of seabass consider the average female fecundity at 12000 per kg body weight and average individual weight at 1.25 kg. For male average weight will be 0.8 kg, sex ratio should be 2:1 (D should be 1 kg/m³ large earthen pond, 5 kg/m³ is smaller plastic pond). Explain how does Biofloc technology boost the aquaculture production? Discuss the cost-benefit analysis of the biofloc technology in Bangladesh perspective. Analyze cost benefit for an Integrated RAS, Raceway and Biofloc farm in 5 acres, with payback period and Break-even point What are the key characteristics of a monk? Why dam height, thickness and side slopes should be considered during pond construction? What are the components of a cage? Explain the planning process of establishing a commercial aqua farm. | 3 4 |
| 9. 10. | b.a.b.a.b. | Calculate the volume of the outdoor tank for a small hatchery with an annual requirement of 4 million two-day old larvae of seabass consider the average female fecundity at 12000 per kg body weight and average individual weight at 1.25 kg. For male average weight will be 0.8 kg, sex ratio should be 2:1 (D should be 1 kg/m³ large earthen pond, 5 kg/m³ is smaller plastic pond). Explain how does Biofloc technology boost the aquaculture production? Discuss the cost-benefit analysis of the biofloc technology in Bangladesh perspective. Analyze cost benefit for an Integrated RAS, Raceway and Biofloc farm in 5 acres, with payback period and Break-even point What are the key characteristics of a monk? Why dam height, thickness and side slopes should be considered during pond construction? What are the components of a cage? Explain the planning process of establishing a commercial aqua farm. Explain the concept of "Race-way Aquaculture System" | 3 4 |
| 9. 10. 11. | a.b.a.b.a.b. | Calculate the volume of the outdoor tank for a small hatchery with an annual requirement of 4 million two-day old larvae of seabass consider the average female fecundity at 12000 per kg body weight and average individual weight at 1.25 kg. For male average weight will be 0.8 kg, sex ratio should be 2:1 (D should be 1 kg/m³ large earthen pond, 5 kg/m³ is smaller plastic pond). Explain how does Biofloc technology boost the aquaculture production? Discuss the cost-benefit analysis of the biofloc technology in Bangladesh perspective. Analyze cost benefit for an Integrated RAS, Raceway and Biofloc farm in 5 acres, with payback period and Break-even point What are the key characteristics of a monk? Why dam height, thickness and side slopes should be considered during pond construction? What are the components of a cage? Explain the planning process of establishing a commercial aqua farm. Explain the concept of "Race-way Aquaculture System" "Domestication is the first step of artificial breeding"-explain. | 3 4 6 1 4 3 2 2 2 |
| 9. 10. 11. | b. a. b. a. b. a. b. a. | Calculate the volume of the outdoor tank for a small hatchery with an annual requirement of 4 million two-day old larvae of seabass consider the average female fecundity at 12000 per kg body weight and average individual weight at 1.25 kg. For male average weight will be 0.8 kg, sex ratio should be 2:1 (D should be 1 kg/m³ large earthen pond, 5 kg/m³ is smaller plastic pond). Explain how does Biofloc technology boost the aquaculture production? Discuss the cost-benefit analysis of the biofloc technology in Bangladesh perspective. Analyze cost benefit for an Integrated RAS, Raceway and Biofloc farm in 5 acres, with payback period and Break-even point What are the key characteristics of a monk? Why dam height, thickness and side slopes should be considered during pond construction? What are the components of a cage? Explain the planning process of establishing a commercial aqua farm. Explain the concept of "Race-way Aquaculture System" "Domestication is the first step of artificial breeding"-explain. Between series and parallel raceway aquaculture system which one is more cost effective? Why? Develop a raceway fish farm model for a commercial aquafarm. | 3 4 6 1 4 3 2 2 2 |

B.Sc. Fisheries (Hons.) Year -3 Semester -2 (July-December), Final Examination, 2020 Course No: ABM-302 (T), Course Title: Agribusiness and Marketing (Theory)

Full Marks: 70; Time: 3 hours

Answer <u>any 3 (Three)</u> questions from each section where Question no. 1 and 5 are mandatory. Figures in the right margin indicate full marks. Use separate answer script for each section.

| 1. | a) b) | Explain the elements of Agribusiness System. Discuss the general tasks of Management. | 3.0 4.0 |
|----|----------------|---|-------------------|
| | c) | Give examples how you will motivate your subordinates as an agribusiness manager in general. | 4.0 |
| 2. | a) b) | Suppose you are planning to start a fish processing plant in Dhaka, now, you need to complete the following two tasks for your company: i) Develop a hypothetical SWOT analysis. ii) Propose four (4) SMART objectives. Is there any relationship between planning and performance?-Explain. | 4.0 4.0 4.0 |
| 3. | a) b) c) | Why is decision-making often described as the essence of a manager's job? Write the eight steps in the decision- making process. "Leaders are born, not made."-Do you agree with this statement? Justify. | 4.0 4.0 4.0 |
| 4. | a) b) c) | Explain the factors that you will consider while hiring personnel for your organization. 'We cannot predict the future. So, there is no point of doing Plan'- Do you agree? Justify. Show and explain the control process. | 4.0 4.0 4.0 |
| | | Section-B | |
| 5. | a) | "Marketing is a process by which companies create value for customers and build strong customer relationships to capture value from customers in return"- Explain it with examples from fisheries sector. | 3.0 |
| 8 | b) c) | Identify the types of Utilities and give examples. Define with suitable examples of Need, Want, Overfull demand and Latent demand. | 4.0 4.0 |
| 6. | a) b) | What are the by-products of fish? How can value be added to fish? Suppose you are working as Marketing Manager at Halda Fisheries. They are planning to sell live fish in Chattogram market. Propose some ideas to create value of your product for management approval. | 4.0 |
| | c) | Draw a typical fish value chain in Bangladesh. | 4.0 |
| 7. | a) b) c) | Briefly discuss the role of marketing in the agribusiness sector. Identify the scopes of marketing in Bangladesh. Hypothetically select a company or organization of your choice. Show the 4Ps of marketing of that company or organization. | 4.0 4.0 4.0 |
| 8. | a) b) | Identify the key challenges of fisheries sector and commercial fish farms in Bangladesh. From the case of the Australian Southern Rock Lobster Association, identify the issues faced by the Matthew Muggleton and market development manager of the collective agri-food organization Southern Rock Lobster (SRL) Limited. | 6.0 |

B.Sc. Fisheries (Hons.) Year -3 Semester -2 (July-December), Final Examination, 2020 Course No: AEN 302 (T), Course Title: Aquaculture Engineering (Theory)

Full Marks: 70; Time: 3 hours

Answer <u>any 5 (five)</u> questions from each section. Figures in the right margin indicate full marks. Use separate answer script for each section.

| 1. | a. | Classify the aquaculture systems based on the intensity of culture. | 2 |
|------------------|---|--|--------------------------------------|
| | b. | In 1-acre fish pond, a farmer wants to stock different layer fish maintaining a ratio of Rui: Catla: Mrigal: Silver carp: Grass carp: Prawn = 30:35:15:5:5:10. What will be the stocking density of each fish species? (Pond depth=4ft) | |
| 2. | a. | "Different types of factors need to be considered in site selection for aquaculture project." - | 4 |
| | b. | Explain. Illustrate a modern shrimp hatchery layout with cost-benefit analysis for Bangladesh perspective. | 3 |
| 3. | a. b. | What kind of material will you select to make a cage bag? Describe different bivalve culture techniques with diagram. | 2 5 |
| 4. | a. b. | Discuss the components of a marine fish hatchery setup. Among Biofloc, Raceway and RAS, which one is more preferable in our country? Why? | 4 3 |
| 5. | a. b. | Why wastewater treatment from different culture system is important in Bangladesh? Briefly describe the waste management system of re-circulatory aquaculture system. | 2 5 |
| 6. | a. b. | Explain water flow through channel, pipe and sluice gate. Briefly discuss about the principles of engineering in aspect of fish-farm construction. | . 2 5 |
| 7. | | Write short notes on any <u>02 (two)</u> of the following: i) Raceway aquaculture system, ii) Integrated aquaculture system and iii) Marine cage culture | 3.5x2=7 |
| | | Section B | |
| | | | |
| 8. | a. b. | Briefly describe the essential components of fish hatchery Calculate the volume of the outdoor tank for a small hatchery with an annual requirement of 4 million two-day old larvae of seabass consider the average female fecundity at 12000 per kg body weight and average individual weight at 1.25 kg. For male average weight will be 0.8 kg, sex ratio should be 2:1 (D should be 1 kg/m³ large earthen pond, 5 kg/m³ is smaller plastic pond). | |
| 8. 9. | b. a. | Calculate the volume of the outdoor tank for a small hatchery with an annual requirement of 4 million two-day old larvae of seabass consider the average female fecundity at 12000 per kg body weight and average individual weight at 1.25 kg. For male average weight will be 0.8 kg, sex ratio should be 2:1 (D should be 1 kg/m³ large earthen pond, 5 kg/m³ is smaller plastic pond). Explain how does Biofloc technology boost the aquaculture production? | |
| | b. | Calculate the volume of the outdoor tank for a small hatchery with an annual requirement of 4 million two-day old larvae of seabass consider the average female fecundity at 12000 per kg body weight and average individual weight at 1.25 kg. For male average weight will be 0.8 kg, sex ratio should be 2:1 (D should be 1 kg/m³ large earthen pond, 5 kg/m³ is smaller plastic pond). Explain how does Biofloc technology boost the aquaculture production? Discuss the cost-benefit analysis of the biofloc technology in Bangladesh perspective. Analyze cost benefit for an Integrated RAS, Raceway and Biofloc farm in 5 acres, with | 3 4 |
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| 9. 10. 11. | b.a.b.a.b.a.b. | Calculate the volume of the outdoor tank for a small hatchery with an annual requirement of 4 million two-day old larvae of seabass consider the average female fecundity at 12000 per kg body weight and average individual weight at 1.25 kg. For male average weight will be 0.8 kg, sex ratio should be 2:1 (D should be 1 kg/m³ large earthen pond, 5 kg/m³ is smaller plastic pond). Explain how does Biofloc technology boost the aquaculture production? Discuss the cost-benefit analysis of the biofloc technology in Bangladesh perspective. Analyze cost benefit for an Integrated RAS, Raceway and Biofloc farm in 5 acres, with payback period and Break-even point What are the key characteristics of a monk? Why dam height, thickness and side slopes should be considered during pond construction? What are the components of a cage? Explain the planning process of establishing a commercial aqua farm. Explain the concept of "Race-way Aquaculture System" | 3 4 |
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B.Sc. Fisheries (Hons.) Year -3 Semester -2 (July-December), Final Examination, 2020 Course No: ABM-302 (T), Course Title: Agribusiness and Marketing (Theory)

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| | c) | Give examples how you will motivate your subordinates as an agribusiness manager in general. | 4.0 |
| 2. | a) | Suppose you are planning to start a fish processing plant in Dhaka, now, you need to complete the following two tasks for your company: i) Develop a hypothetical SWOT analysis. ii) Propose four (4) SMART objectives. | 4.0 |
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