

Chattogram Veterinary and Animal Sciences University
Faculty of Fisheries
Department of Aquaculture
MS in Aquaculture, Jul-Dec semester, Final Exam/2022
Course Code: AFT-502 (T), Course Title: Aquaculture Feed Technology
Full Marks: 40; Time: 2hours

Answer **any four (04)** from the following. Figure in the right margins indicates full marks. Splits answers is not acceptable.

1. a. Define anti-nutritional factors. Write down the major anti-nutritional and contaminations in feed ingredients. 4
- b. Explain in details the conventional and non-conventional feedstuffs for feed formulation 3
- c. Differentiate conventional and non-conventional feedstuffs used for feed formulation. 3
2. a. Write down the importance of digestibility in fish farming nutrition. 3
- b. Write down the methods how to determine the digestibility. 3
- c. Illustrate the factors influencing digestibility. 4
3. a. Define and classify hormones. 3
- b. Explain in details the energy metabolism of fish 4
- c. Write down the side effects of hormone 3
4. a. Write down the importance of antibiotics use in aquaculture 2
- b. List out 5 antibiotics with their purposes and dosages 4
- c. Write down the advantages and disadvantages of using antibiotics in aquaculture 4
5. a. According to the mode of action classify antioxidants 3
- b. Write down the function of antioxidants. List out commonly used natural antioxidants in feed. 4
- c. Illustrate the criteria for selecting feed antioxidants 3

Chattogram Veterinary and Animal Sciences University
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Department of Aquaculture
MS in Aquaculture, Jul-Dec semester, Final Exam/2022
Course Code: IAF-502 (T), Course Title: Integrated Aqua-farming
Full Marks: 40; Time: 2hours

Answer **any four (04)** from the following. Figure in the right margins indicates full marks. Splits answers is not acceptable.

1. a. Write down the factors need to be considered while selecting integrated farming systems. 2
b. Explain in details the advantages and constraints of integrated aquaculture farming systems. 4
c. Summarize the advantages and disadvantages of integrated multi-trophic aquaculture (IMTA). 4
2. a. What are the major considerations to adopt integrated aqua-farming in Bangladesh? 3
b. Write down the socio-economic consideration for integrated farming systems. 3
c. Summarize the economic efficiency of integrated aquaculture and horticulture. 4
3. a. Explain in details the different management steps for rice-aquaculture farming system. 4
b. Write down the benefits and disadvantages of rice-aquaculture farming. 2
c. Write down the management system of rice-aquaculture farming. 4
4. a. Explain in details the integration between aquaculture and horticulture 6
b. Write down the advantages and economic efficiency of integrated aquaculture and horticulture. 4
5. a. Write short note any 2 of the following: i) Poultry-Fish System; ii) Rabbit-fish integration; iii) Rice-aquaculture farming with livestock. 2.5x2=5
b. Write down the basic principle of integrated aquaculture-horticulture. 5

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Department of Aquaculture
MS in Aquaculture, Jul-Dec semester, Final Exam/2022
Course No & Title.: AQI-502 (T); Aquatic Immunology (Theory)
Full Marks: 40; Time: 2hours

Answer **any four (04)** from the following. Figure in the right margins indicates full marks. Splits answers is not acceptable.

1. a. Write down the importance and principles of fish vaccination. 3
b. Illustrate the primary considerations before vaccination. 3
c. Summarize the significance of vaccination in aquaculture. 4
2. a. Explain in details the administration strategies of fish vaccine. 4
b. Write down the different factors for optimal effects of vaccines. 4
c. List out of 10 commonly available fish vaccines for fish. 2
3. a. What do you mean by immunostimulants. 2
b. Write down the disadvantages of immunostimulants. 3
c. Explain in details the use of different types of immunostimulants in aquaculture 5
4. a. What are the factors affecting the efficiency of immunostimulants? 2
b. Summarize the types of immunostimulants used in aquaculture. 4
c. Write down the advantages and disadvantages of immunostimulants. 4
5. a. Explain in details the immunosuppressive effects of environmental pollutants in aquaculture. 4
b. Write down the types of immunostimulants in fish. 3
c. Write down the risk and limitations fish vaccination. 3

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Department of Aquaculture
MS in Aquaculture, Jul-Dec semester, Final Exam/2022
Course Code: ACA-502 (T), Course Title: Advanced Coastal Aquaculture (Theory)
Full Marks: 40; Time: 2hours

Answer **any four (04)** from the following. Figure in the right margins indicates full marks. Splits answers is not acceptable.

1. a. Define coastal aquaculture. List down 3 fin fish, shrimp and crab species scientific name cultured in farms and hatcheries. 5
- b. Explain in details different factors which need to be considered during operation, management and seed production of brackish water fish farms. 5
- a. Write down two different systems used for crab fattening. 3
- b. Illustrate the culture technique of crab. 7
- a. Explain in details the production cycle of *Mugil cephalus* 4
- b. Write down the culture technique of Mullet (*Mugil cephalus*) 6
- a. Explain in details the seabass culture technique in Bangladesh. 6
- b. How you are going to do the management of sea bass hatchery and farm 4
2. a. Write down the criteria for selection of shrimp hatcheries. 4
- b. Differentiate culture technique of prawn among gher, extensive, improved extensive, semi-intensive and intensive culture system. 6
- a. List down the different guidelines to adopt for feed and feed management in shrimp farming. 4
- b. Write down the effects of predators in coastal aquaculture 3
- c. Culture technique of shrimp 3
3. a. Culture technique of milk fish 5
- b. Give a flow chart for the pest control strategy. 3
- c. Write down the ethics of predator management. 2
4. a. What are the types and extent of damage inflicted by predatory species 2
- b. Explain in details different control methods of predators in coastal aquaculture 8
- c. Write down the control management of pests.
5. a. Integrated Pest Management 5
- b. Write down the general principles of Integrated Pest Management (IPM) 5
- c. Illustrate how to control predators.

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Department of Aquaculture
MS in Aquaculture, Jul-Dec semester, Final Exam/2022
Course No & Title.: AQP-502 (T); Aquatic Pathology (Theory)
Full Marks: 40; Time: 2hours

Answer **any four (04)** from the following. Figure in the right margins indicates full marks. Splits answers is not acceptable.

1. a. Summarize the impacts of fish diseases in the context of Bangladesh. 3
b. Write down the prevention and control measures of viral diseases. 3
c. Write down the causative agent, fish host, gross signs of the following viral diseases: 4
Viral hemorrhagic septicaemia (VHS); Spring viremia of carp (SVC); Tilapia lake virus (TiLV) and White Spot Syndrome (WSD)
2. a. List out three (03) bacterial, fungal and parasitic diseases occurs in fish. 4
b. Explain in details the causative agent, signs, diagnosis, control method and treatment of the following bacterial diseases found in fish: Vibriosis; Motile Aeromonas Septicemia (MAS) 6
3. a. Write down the causative agent, pathology and pathogen viability of Fusarium infection parasitic diseases in crayfish. 4
b. How to control the spread of crayfish plague in aquaculture. 2
c. List out 6 commonly found Molluscan Disease 4
4. a. Write down the mode of transmission of fungi in aquaculture. 2
b. Write down the etiology, host range, pathogenic sign and symptoms, clinical diagnosis and treatments of Cotton Wool Disease and Yellow Muscle Disease in fish. 8
5. a. Explain in details the causative agent, signs and symptoms, prevention and control of non-infectious diseases of muscle necrosis, soft-shell syndrome and red disease. 7
b. Differentiate general vs. systemic pathology. 3

Chattogram Veterinary and Animal Sciences University
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Department of Aquaculture
MS in Aquaculture, Jul-Dec semester, Final Exam/2022
Course Code: SAC-502 (T), Course Title: Sustainable Aquaculture and Climate Change
Full Marks: 40; Time: 2hours

Answer **any four (04)** from the following. Figure in the right margins indicates full marks. Splits answers is not acceptable.

1. a. Define the sustainable aquaculture? Write down the importance of sustainable aquaculture. 3
- b. Write down the characteristics of sustainable aquaculture 3
- c. Summarized the potential benefits and challenges of community-based marine aquaculture. 4

2. a. Explain in details the climate change projections for aquaculture 3
- b. Write down the key impacts and vulnerabilities of climate change in Bangladesh 3
- c. Write down the impacts of climate change on fisheries and aquaculture. 4

3. a. What do you mean by ocean acidification? 2
- b. Write down the different mechanisms for ocean acidification 5
- c. Write down the impacts of climate change in the ocean. 3

4. a. Illustrate the key challenges faced by aquaculture sector in Bangladesh 3
- b. Summarize the trend of resource allocation in aquaculture and sustainable development 4
- c. Write down the different approaches for making aquaculture sustainable 3

5. a. Draw a general schema of global climate change 3
- b. Illustrate the climate change mechanism in aquaculture 3
- c. Explain in details the five climate change concerns for Bangladesh 4