

**Chattogram Veterinary and Animal Sciences University**  
**Faculty of Fisheries**  
**Department of Aquaculture**  
**MS in Aquaculture, Jan-June semester, Final Exam/2022**  
**Course No & Title.: APE-501 (T); Aquafarm Planning and Engineering (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 waste management strategy in aquaculture. 4  
b. Illustrate the different methods for waste removal in aquaculture. 4  
c. What are the different sources of waste from aquaculture? 2
2. a. What are the factors and principles associated with fish transportation? 5  
b. Explain in details the different methods used for transporting of fish. 5
3. a. Discuss in details the problems encountered during selection of soils for design of ponds, canals and dams in aquaculture. 4  
b. Write down the significance of drying during preparation of ponds? 2  
c. For designing aquaculture systems what are the hydraulic aspects need to be considered? 4
4. a. Explain in details the features of a commercial fish pond. 4  
b. List out the different types of ponds need to prepare for fish culture. 3  
c. Briefly discuss the physical factors need to be consider for constructing a pond. 3
5. a. What are the factors need to follow for site selection for aquaculture? 6  
b. Explain in details the marketing system of Fish. 4

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**Course No & Title.: APA-501 (T); Aquatic Parasitology (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 role of parasitology in fisheries science. 3  
b. Life cycle of fish cestode. 7
2. Discuss the causative agents, symptoms, pathological sign and prevention and control measure of following parasitic diseases. 10
  1. Acanthocephalan disease
  2. Fish Leech
3. a. Illustrate different steps of whole mount of fish parasites. 6  
b. Discuss mounting and preservation of parasites. 4
4. a. Define zoonosis. List out five major fish-borne zoonotic disease with causative agent. 4  
b. Causative agent, disease transmission, clinical signs, laboratory diagnosis and treatment of *Clonorchiasis* diseases. 6
5. a. Classify parasites according to their habitat, their dependence on the host and pathogenicity. 4  
b. Explain in details ecology of fish parasites. 6

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**Course No & Title.: APH-501 (T); Aquatic Pharmacology (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. What are the sources of aqua drugs? Categorize aqua drugs available in Bangladesh based on their purpose of uses. 4
- b. Explain in details methods of drug administration in fish including their advantages and disadvantages. 6
2. a. Write down the threats of drug administration in aquaculture. 2
- b. Enlist the recommendations of drug administration for the aquaculture industry. 6
- c. Define pharmacodynamics. 2
3. a. Write down the characters of an ideal anesthetic. What is the purpose of using anesthetics? 3
- b. Enlist commonly used anaesthetic agents in fish. 2
- c. Why induced breeding is necessary for fish culture. 5
4. a. Write down the different purposes of aqua-drugs in Bangladesh. 4
- b. Explain in details effect of drugs on aquatic environment. 6
5. a. Define receptor. Classify receptor on the basis of their location and binding capacity. 5
- b. Write down different factors affecting drug effect and dosage in fish. 5

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**Course No & Title.: AQN-501 (T); Aquaculture Nutrition (Theory)**  
**Full Marks: 40; Time: 2 hours**

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

1. a. Define protein. Write down the properties of protein. 3
- b. Write down in details the classification of protein. 3
- c. Explain in details the protein synthesis in fish body. 4
  
2. a. Write down the structure of amino acids 2
- b. Illustrate the metabolism of proteins and amino acids in fish body. 5
- c. Classify amino acids based on chemical properties and nutritional requirements. 3
  
2. a. Write down the importance of lipids and fatty acids for fish culture. 2
- b. Explain in details the lipid digestion steps and absorption sites in fish. 6
- c. Summarized the dietary requirements of lipid in fish 2
  
3. a. Generalized energy partitioning in fish. 2
- b. Define specific dynamic action. 2
- c. Explain in details the factors affecting the energy requirements of fish. 6
  
4. a. Write down the types and function of carbohydrate. 3
- b. Summarize the digestion of carbohydrates in fish body. 4
- c. List down the factors affecting carbohydrate digestibility in fish? 3
  
5. a. Write down the role of brood stock nutrition on fish fecundity, fertilization of eggs and embryo development? 6
- b. Explain in details the nutrition requirements for larvae rearing in aquaculture. 4

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**Course No & Title.: AHM-501 (T); Aquatic Animal Health Management (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. Enlist major bacterial diseases found in fish body. 2  
b. Write down the clinical signs, symptoms, treatment and prevention of Furunculosis and fish tuberculosis diseases of fish. 8
2. a. Summarize the symptoms, prevention and treatment of Viral Hemorrhagic Septicemia (VHS), Infectious Pancreatic Necrosis (IPN) and Spring Viremia of Carp diseases. 7  
b. Write down the etiology, pathogenic sign and symptoms, clinical diagnosis and treatments of Saprolegniasis "Cotton Wool Disease" in fish. 3
3. a. List out 2 bacterial and viral diseases of shrimp with their symptoms, treatments and prevention. 6  
b. Write down the characteristics of an efficient probiotics. 4
4. a. What do you mean by trans boundary aquatic animal diseases? 4  
b. Write down the global guidelines on health management for the responsible movement of live aquatic animals 6
5. a. Categories traditional and commercial drugs and chemicals in disease treatment in Bangladesh. 5  
b. Write down the effects of drugs on human health and aquatic environment. 5

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**Course No & Title.: AFA-501 (T); Advanced Freshwater 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. Summarized the major prospects and constraints of cage culture system in Bangladesh. 2  
b. Explain in details the cage design and construction. 5  
c. What are the species are suitable to culture in cage and list down the environmental impacts of cage culture. 3
2. a. Write down the importance of Aquaponics. What are the components are essential for aquaponics. 5  
b. Illustrate the advantages and disadvantages of Aquaponics. 5
3. a. Summarized the technological changes in aquaculture base on the Farming systems distribution. 5  
b. Explain in details the raceway aquaculture? List out the advantages and disadvantages of raceway aquaculture. 5
4. a. Explain the importance of prawn export in the economy of Bangladesh. 4  
b. Write down in details the present status and culture techniques of prawn culture. 6
5. a. Write down the definition of the threatened species. What are the reasons behind the fish species being threatened. 5  
b. Explain in details the advantages and disadvantage of different culture practiced to conserve the threatened fish species. 5