

Chittagong Veterinary and Animal Sciences University, Chittagong

Faculty of Fisheries

B.Sc. Fisheries (Hons.), Year-04, Semester-02 (July–December), Final Examination' 2017

Course Code: FIL-402 (T); Course Title: Fish Inspection and Legislation (Theory)

Full Marks: 70; Time: 3 hours

Figure in the right margin indicates the full mark. Answer any 05 (five) questions from each section. Use separate answer script for each section.

Section -A

1. a) Write down the importance of studying Fish Inspection and Legislation for a Fisheries graduate. 3.5
b) Briefly discuss present status of fish processing industries of Bangladesh. 3.5
2. a) What do you mean by traceability? 2.0
b) Enlist the information that is necessary to record a farmer and depot owner to maintain traceability. 2.0
c) "Traceability helps to uplift seafood business". Do you agree with this statement? Justify your answer. 3.0
3. a) Fish is a high quality food. Justify your answer. 1.5
b) List down the intentionally or unintentionally added chemicals/veterinary drugs in fish/shrimp farms, hatchery and feeds. 4.0
c) Differentiate between food infection and food intoxication with examples 1.5
4. a) Write down the procedure for inspection of a processing establishment. 3.0
b) Why pre-export testing of fishery products is important? Justify. 2.0
c) Enlist major aspects of inspection for a pre-export consignment. 2.0
5. a) How a inspector will report after completing audit in a processing establishment? 3.0
b) Briefly discuss the listing process of a newly established fish processing plant. 4.0
6. a) Illustrate the organogram of FIQC. 4.0
b) What are the task and duties of inspectors/auditors? 3.0
7. a) What is critical non-compliant? List down 8 key points of USFDA general sanitation conditions of the industry 4.0
b) What do you mean by medium and low risk Levels of non-compliance? Mention key points of GMP conditions of a fish processing industry 3.0

Section B

8. a) What are the objectives of food law? 1.0
b) Write in brief some legal regulatory national legislations which are in place for official control of fishery products. 2.0
c) In addition to the regulations, mention some policies and guidelines, which are also in place for official control of fishery products in Bangladesh. 4.0
9. a) What do you mean by verification? 2.0
b) Discuss about different types of verifications practiced in Bangladesh. 5.0
10. a) What do you mean by NRCP? 1.0
b) Briefly discuss sampling procedure for analysis of residues. 3.0
c) What are the investigation measures in case of NRCP positive results? 3.0
11. a) What are the major issues and challenges in seafood industry? 3.0
b) "Receiving is a high risk zone of a fish processing plant" Do you agree with this statement? Justify your answer. 2.0
c) Is there any effect of biogenic Amins on fish quality? Justify. 2.0
12. a) Who will be a authorized officer for official control of fishery of fish and fishery products in the processing establishment as per FIQC rule 3. 3.0
b) Describe briefly measures to be taken as per FIQC rule-7 after the return of fish which has been exported previously. 4.0
13. a) Mention sampling plan and microbiological limit for fish and fish products (ICMSF- 1986) 4.0
b) List down some important aspects need to follow for compliance of official control for fish and shrimp farms. 3.0
14. Write notes on the followings (any two) 3.5 × 2= 7.0
 - a) Hatchery Act and rules
 - b) RASFF notification
 - c) Marine biotoxins
 - d) Spore and non-spore forming bacteria

Chittagong Veterinary and Animal Sciences University, Chittagong
Faculty of Fisheries
B.Sc. Fisheries (Hons.), Year-4, Semester-2 (July – December), Final Examination' 2017
Course Code: FFT-402 (T); Course Title: Fish Feed Technology (Theory)
Full Marks: 70; Time: 3 hours

Figure in the right margin indicates the full mark. Answer any 05 (five) questions from each section. Use separate answer script for each section.

Section A

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|----|---|--------------------|
| 1. | a) Why the study of optimum nutritional requirement is necessary for the growth of fish and shellfish? | 2 |
| | b) Describe the key issues related to feed development and feeding for sustainable aquaculture. | 5 |
| 2. | a) Write down the importance of non-nutrient components in feed formulation. | 2 |
| | b) Briefly discuss about the following non-nutrient components- i) Binder; ii) Fibre. | 5 |
| 3. | a) Make a comparison on suitability between dry and moist pellets. | 3 |
| | b) Classify different types of artificial feed based on different stages of fish growth. | 4 |
| 4. | a) What do you mean by antinutrients? | 1 |
| | b) Describe two important antinutrients found in oil seed meals with special emphasis on their chemical nature, mode of action and methods for removal or reduction of antinutrients. | 6 |
| 5. | a) What is alternative protein of animal source? Mention different alternative protein sources used in aquafeeds in Bangladesh. | 2 |
| | b) Describe soybean meal with special emphasis on their types, chemical and physiological properties, feeding value and recommended inclusion level. | 5 |
| 6. | a) Write down the deteriorative changes take place in feedstuffs and feeds during storage. | 4 |
| | b) Write in brief the maintenance of feed quality during storage? | 3 |
| 7. | Write short notes on any two of the followings- | $3.5 \times 2 = 7$ |
| | a) Present status of commercial aquafeeds in Bangladesh; b) Blood meal; c) Antioxidants in fish feed. | |

Section B

- | | | |
|-----|--|--------------------|
| 8. | a) What are the selection criteria for protein sources in preparation of compound feeds? | 2 |
| | b) Briefly describe the basic limitations in feedstuffs selection for aquafeeds. | 5 |
| 9. | a) What types of machineries are mainly used in feed manufacturing? | 2 |
| | b) Write in brief the basic steps of fish feed manufacturing. | 5 |
| 10. | a) Define feed formulation and manufacture. | 2 |
| | b) Describe Pearson square feed formulation technique with an example. | 5 |
| 11. | a) What do you mean by feeding rate and feeding frequency? | 3 |
| | b) Why selection of feeding method is very important in aquaculture? | 4 |
| 12. | a) Write down the importance of fish feed laws and regulations. | 2 |
| | b) Briefly describe international code of conducts for inclusion of feed ingredients in fish feed formulation. | 5 |
| 13. | a) Write down the associated problems related to adventitious toxic factors in fish feed. | 4 |
| | b) How do you overcome these problems? | 3 |
| 14. | Write short notes on any two of the followings. | $3.5 \times 2 = 7$ |
| | a) Biological evaluation of fish feed; b) Larval nutrition; c) Standard limit in feed ingredients. | |

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Section -A

1. a) Define fish hatchery and hatchery management. 1
b) Explain the role of fish hatchery for meeting the demand of fish seeds in Bangladesh. 4
c) Mention the causes of decreasing the availability of wild fish seeds. 2
2. a) Define broodstock and write the importance of brood fish in hatchery. 2
b) Describe the brood management procedure with special emphasis on nutrition, stocking density, broods health and genetics. 5
3. a) Define induced breeding. 1
b) What are the inducing agents widely used for ovulating fishes in the hatcheries of Bangladesh. 2
c) Mention the problems faced by the hatchery operators in procuring quality broods. 4
4. a) Describe the functional mechanism of a circular incubator. 3
b) Write down the advantages and disadvantages of a circular and a bottle incubator. 4
5. a) Differentiate a prawn hatchery from a finfish hatchery. 2
b) Describe the most important criteria to be considered for establishment of a finfish hatchery. 5
6. a) What are the criteria of selecting a fish species to be used for seed production? 2
b) Show that hatchery business is profitable by giving an appropriate example of cost-benefit analysis. 5
7. a) What are the objectives of selection in aquaculture? 2
b) Discuss different types of selection programs for more than one phenotype with their advantages and disadvantages. 5

Section B

8. a) Define ovulation, embryo and larva. 2
b) Explain the effects of incubation temperatures on hatching of incubated fish eggs with examples. 5
9. a) Define hybridization and write its uses in aquaculture. 2
b) Explain the different cross-breeding programs in aquaculture. 4
c) Why does not hybridization produce broodstock? 1
10. a) Inbreeding changes genotypic frequencies-Explain how. 2
b) What are the consequences of inbreeding? 2
c) How does rotational line crossing minimize the rate of inbreeding? 3
11. Elaborate the following statements: 1.75×4= 7
 - i) Nutrition can influence the gonadal maturation of fish;
 - ii) Species rotation is now-a-days a usual phenomena in the fish hatchery;
 - iii) Environmental factors play one of the key roles in egg and sperm release of fish;
 - iv) Feeding frequency affects the growth and survival of larvae during rearing;
12. a) What do you mean by live food and artificial feed? 2
b) Explain the significance of feed particle size and feeding frequency for fish larvae. 4
c) Mention the factors affecting first feeding of fish larvae. 1
13. a) What are the factors to be considered during live fish transportation? 2
b) Describe the closed transportation systems of live fish with their advantages and disadvantages. 5
14. Write notes on any **02 (Two)** of the followings: 3.5×2=7
 - a) Two stage fry rearing;
 - b) Genetic drift;
 - c) Hatchery proper;
 - d) Water pollutant from hatchery.

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B.Sc. Fisheries (Hons.), Year-4, Semester-2 (July – December), Final Examination' 2017

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1. a) Why the study of optimum nutritional requirement is necessary for the growth of fish and shellfish? 2
b) Describe the key issues related to feed development and feeding for sustainable aquaculture. 5
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b) Briefly discuss about the following non-nutrient components- i) Binder; ii) Fibre. 5
3. a) Make a comparison on suitability between dry and moist pellets. 3
b) Classify different types of artificial feed based on different stages of fish growth. 4
4. a) What do you mean by antinutrients? 1
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b) Describe soybean meal with special emphasis on their types, chemical and physiological properties, feeding value and recommended inclusion level. 5
6. a) Write down the deteriorative changes take place in feedstuffs and feeds during storage. 4
b) Write in brief the maintenance of feed quality during storage? 3
7. Write short notes on any two of the followings- 3.5 × 2 = 7
a) Present status of commercial aquafeeds in Bangladesh; b) Blood meal; c) Antioxidants in fish feed.

Section B

8. a) What are the selection criteria for protein sources in preparation of compound feeds? 2
b) Briefly describe the basic limitations in feedstuffs selection for aquafeeds. 5
9. a) What types of machineries are mainly used in feed manufacturing? 2
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