

Chittagong Veterinary and Animal Sciences University
FACULTY OF FISHERIES

MS in Fishing and Post-Harvest Technology, July-December/2017, Final Examination
Course No. AQI-502, Course Title: Advanced Fish Quality Control and Inspection
Total Marks: 40; Time: 2 hours

Answer any 04 (four) from the following questions. Individual part of a question shall be answered together.

1. a) What do you mean by quality control of fish? Explain the following terms: 5
i) Fish quality ii) Quality assurance iii) Compliance and non-compliance
iv) Traceability
- b) Why do you think quality control is indispensable in processing establishments in Bangladesh? Discuss. 5
2. a) What do you mean by HACCP? State its ground rules. 3
- b) Prepare a risk based hazard analysis worksheet for IQF *Hilsha* fish in different steps with possible potential hazards in each steps. 7
3. a) Identify control measures of pathogenic bacteria, chemicals, parasites and physical hazards in fishery products. 3
- b) What are the criteria to be considered for successful implementation of a HACCP plan? Discuss the pre-requisite programs of HACCP system. 7
4. a) What do you mean by scombroid fish poisoning? How does it take place? Mention its control measures. 2
- b) What do you mean by NRCP? Briefly discuss its working protocol. 4
- c) Briefly describe the components of traceability. 4
5. a) Write short notes on risk categorization of processing establishments. 3
- b) What do you mean by quality inspection? Suppose you are a member of a specialized inspection team and have been asked to carry out a risk based inspection in a fish processing plant. Discuss how you will do that. 7

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July-December Semester, Final Examination 2017

Course code: FBT-502, Course Title: Fishery By-products technology

Full Marks: 40, Time: 2 hours

Answer any **four (04)** questions. A figure in the right margin indicates full marks.

1.
 - a) What do you mean by Fishery By-products? 1
 - b) Enlist fifteen by-products that are commercially important. 3
 - c) Write down the importance of studying Fishery by-products Technology. 4
 - d) Differentiate between by-catch and by-products. 2

2.
 - a) Briefly discuss wet rendering and dry rendering process with their advantages and disadvantages. 5
 - b) Why fish lipid is better than cattle lipid? Justify your answer. 2
 - c) Briefly discuss production of seafood meal using fishery waste products. 3

3.
 - a) What do you mean by fish silage? 1
 - b) Illustrate production procedure of fish silage with its utilization. 6
 - c) What are constraints of making fish silage in our country? 3

4.
 - a) What do you mean by micro encapsulation? 1
 - b) Illustrate production procedure of fish peptides from fish by-products. 5
 - c) Briefly discuss health benefits of fish peptide powder. 4

5.
 - a) Differentiate among FPC, FPH and fish meal. 3
 - b) What is caviar? Briefly discuss caviar preparation technique from Salmon fish. 4
 - c) Draw schematic diagram of leather processing from fish. 3

6.
 - a) What do you mean by pearl essence? 1
 - b) Illustrate detail procedure of pearl essence production. 4
 - c) What do you mean by chitin and chitosan? 2
 - d) Draw schematic diagram of isinglass production. 3

Chittagong Veterinary and Animal Sciences University
Department of Fishing and Post-harvest Technology
July-December Semester, Final Examination 2017
Course code: SWB-502 (T), Course Title: Seaweed Biotechnology (Theory)
Full Marks: 40, Time: 2 hours

Answer any **four (04)** questions. A figure in the right margin indicates full marks.

1. a) Write down the importance of studying Seaweed Biotechnology. 3
b) "Seaweed is a source of life saving drugs". Justify the statement. 2
c) What are the major constraints of seaweed culture in Bangladesh? How can you overcome that hindrance? Do you think seaweed culture would be profitable in Bangladesh? 5
2. a) Is there any health risk of eating seaweed? Justify your answer. 2
b) Enlist algal toxins with their toxicity effects. 3
c) Briefly discuss best seaweed culture method in Bangladesh. Which species you will consider during this culture? Why? 5
3. a) List six seaweed species with their common and scientific name. 3
b) Briefly discuss growth parameters of seaweed biomass. 3
c) What do you mean by biofuel? Briefly discuss prospects and constrains of biofuel production in Bangladesh. 4
4. a) What do you mean by secondary metabolites? 2
b) Enlist secondary metabolites, which can be isolated from seaweed. 2
c) Write short note on molecular farming. 2
d) Illustrate wastewater treatment procedure using seaweed. 4
5. a) Briefly discuss the role of PUFA in preventing thrombosis. 3
b) How does seaweed prevent Diabetes? 3
c) What do you know about Algototherapy? Briefly discuss the utilization of seaweed as UV absorbing substances. 4
6. a) Write short note on Mannitol. 2
b) Illustrate production procedure of Fucosterol by Supercritical Carbon-dioxide method. 3
c) Enlist possible sources of bioactive peptides. 1
d) What do you mean by promoter and reporter genes? 1
e) Discuss major difficulties in the field of Algal Biotechnology and Genetic Engineering? 3

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MS in Fishing and Post-Harvest Technology, July-December/2017, Final Examination
Course No. SFB-502, Course Title: Seafood Biochemistry
Total Marks: 40; Time: 2 hours

Answer any 04 (four) from the following questions. Individual part of a question shall be answered together.

1. a) Do you think marine fishes are more beneficial for human health over their freshwater counterparts? Why? 3
- b) What do you mean by ω -3 and ω -6 fatty acids? Mention some dietary sources of these fatty acids. 2
- c) Enumerate the beneficial effects of ω -6 fatty acids in human health. 5
2. a) Draw and label a vertical section of fish showing white and dark muscle. 1
- b) Write down the composition and properties of white and dark muscle of fish. 4
- c) Discuss various biochemical changes of fish muscle protein in chilled condition. 5
3. a) Describe in brief the coagulation property of fish muscle protein. Write down the role of p^H on Ca^{2+} ATPase activity? 3+2
- b) Discuss the role of lipid in the quality and processing of fish. 5
4. a) Enumerate the role of p^H on fish quality. 3
- b) Differentiate between vitamins and minerals. 2
- c) Describe how NPN compounds contribute to the taste and spoilage of fish. 5
5. a) What do you mean by bioaccumulation? Illustrate the mechanism of TTX bioaccumulation. 4
- b) Make a list of different contaminants and toxin with their maximum allowable limit in fish and fish products. 4
- c) Write down some practical means of detoxifying shellfish biotoxin. 2

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July-December Semester, Final Examination 2017
Course code: BFP-502, Course Title: Biotechnology in Fish Processing
Full Marks: 40, Time: 2 hours

Answer Any four (04) questions. A figure in the right margin indicates full marks

1. a) Explain the following terms: i) Biotechnology; (ii) Bioinformatics; (iii) Blue Biotechnology; and (iv) Green Biotechnology. 5
- b) Write down the application of biotechnology in Fisheries industry. 5
2. a) What is protease? Write down properties and functions of proteases. Classify proteases on the basis of mode of action. 5
- b) Give a brief description on proteases application in sea food industry in developed countries. 5
3. a) What is fish protein hydrolyzate (FPH)? Give a detail manufacturing process of FPH in a fish processing industry. 5
- b) Why fish spoil? Give a brief overview on modern fish preservation methods. 5
4. a) Write the basic principles of seafood packaging. Describe briefly the materials used for food packaging in fish processing industry. 5
- b) Write in details on modern food packaging methods. What is MAP? 5
5. a) What do you know about bacteria, virus, yeast, mold and actinomycetes? 5
- b) Write down new and novel microbiological techniques followed in modern scientific world. 5
6. a) Write down the physical and chemical composition of crab and shrimp waste. How will you manage the wastes produced in a fish and shrimp processing industry? 5
- b) What is fish sauce? How will you prepare fish sauce from suitable species? Write the role of proteolytic enzymes in fish sauce fermentation. 5

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Course code: AFP-502, Course Title: Advanced Fish Processing
Full Marks: 40, Time: 2 hours

Answer Any four (04) questions. A figure in the right margin indicates full marks

1. a) Write the steps followed on board handling since catching up to landing. Name factors affecting quality of raw materials. 5
b) Give a brief description on fish supply chain and value chain. 5
2. a) List down exportable fishery products of Bangladesh. Write down detail procedure of shrimp processing in an ISO certified processing plant. 5
b) How will you prepare fishmeal from low-cost marine fish? What are the main constraints exist in fishery products export? 5
3. a) What do you mean by standard and specification? Give a brief over view on product specification and process specification. 5
b) Write the importance of HACCP on quality aspects of fishery products. Write down the name of different national and international organizations concerned for ensuring quality of fishery products. 5
4. a) What is BSTI? Write the major functions of BSTI. 5
b) What do you mean by CODEX? Describe briefly on 'FAO Code of Practice'. 5
5. Write in brief on the following terms: (i) ISO 9000 series; (ii) USFDA; (iii) BRC; and (iv) HALAL. 2.5 x 4 = 10
6. a) Write down biochemical changes occurs in newly caught fish and subsequent handling to the distant market. 5
b) What is shelf life? How will you increase the shelf life of fish? Name the parameters considered for quality assessment by physical method. 5