

Chattogram Veterinary and Animal Sciences University
MS in Food Processing and Engineering Final Examination
July- December Semester 2020

Course Title: By-product Utilization and Waste Treatment in Food Industries

Course Code: BUW-502

Total Marks: 40 Time: 2 hours

Answer any four (4) questions. Figures in the right margin indicate full marks.

1. a. Is there any difference between by-products and co-products? Write down the importance of microbiological risk management in the stabilization of co-products? **5.0**
b. Briefly describe the wastes obtained from different fruit and vegetable sources with referring the wastes as percentage of original raw material. **5.0**

2. a. How trimmings and pulps from fruit and vegetable processing can be recovered and reused? **5.0**
b. What do you mean by fish silage? Write down the potential uses of waste derived from fish and fishery products. **5.0**

3. a. Explain activated sludge process and trickling filter system in industrial waste treatment. **5.0**
b. What do you mean by water hardness? How temporary and permanent water hardness can be removed? **5.0**

4. a. Explain different theories of various physical and chemical separation technologies. **5.0**
b. Write short notes on: **5.0**
 - I. Ponds and lagoons
 - II. ETP

5. a. What are the properties and requirements of processing waters? What does DO, BOD, and COD stand for? **5.0**
b. A sample of wastewater has an ultimate BOD of 280mg/L and a 5-day BOD of 240mg/L. Calculate 20-day BOD of this sample. **5.0**

Chattogram Veterinary and Animal Sciences University
MS in Food Processing and Engineering
July-December Semester Final Examination, 2020
Subject Code & Title: NFF 502, Nutraceuticals and Functional Foods
Total marks: 40 Time: 2 hours

Answer any four (4) questions. Figures in the right margin indicate full marks.

1. a. Distinguish between functional and nutraceutical foods with their classification. **5**
- b. What factors are considerable to consumer to select nutraceuticals? **2**
- c. Mention major functional and nutraceutical compounds from marine sources. **3**
2. a. Briefly explain the pressurized low polarity water extraction process to extract bioactive compounds. **7**
- b. Highlight the advantages of vacuum distillation extraction process. **3**
3. a. List up the proposed criteria for microorganisms to be included in probiotic foods and drinks. **2**
- b. Differentiate between probiotics and prebiotics. **2**
- c. Briefly explain the health beneficial effects of yoghurt to call it probiotics. **6**
4. a. Discuss 3 bacteriocins produced by lactic acid bacteria. **6**
- b. Why nitrites are used for food preservation? **2**
- c. Draw a flow diagram of the production of extra virgin olive oil. **2**
5. a. Elucidate the modes of action of pH on microorganism. **3**
- b. How does pH affect to gel formation, protein and vitamin stability? **5**
- c. Water activity affects on microbial activity. Justify your answer. **2**

Chattogram Veterinary and Animal Sciences University
MS in Food Processing and Engineering
July-December Semester Final Examination, 2020
Subject Code & Title: ATA 502, Advanced Technology of Animal Products
Total marks: 40 Time: 2 hours

Answer any four (4) questions. Figures in the right margin indicate full marks.

1. a. Define meat. Which factors influence the growth of microorganisms in meat? 1+3=4
b. Elucidate the biochemical and physical alterations occurred in the postmortem stages of meat muscle. 6
2. a. Describe the stunning methods to slaughter the animals. 5
b. What do you mean by restructured meat products? Classify sausages. 1+2=3
c. Mention some edible meat by-products with their usages. 2
3. a. What types of chemical losses can be occurred in the fish muscle due to destruction or removal of nutrients? Explain briefly. 4
b. Differentiate between fish meal and fish protein concentrate. 2
c. Illustrate and explain the preparation procedure of fish protein concentrate. 4
4. a. Highlight the influencing factors for grading the eggs. 2
b. Briefly explain the causes of deterioration of the quality of egg. 5
c. Enumerate major bacterial food poisonings occurred in the fish and fishery products. 3
5. a. Why pasteurization and homogenization are done in market milk? 2
b. Draw a flow diagram and explain the manufacturing process of cheddar cheese. 6
c. Mention the composition of dried and condensed milk. 2

Chattogram Veterinary and Animal Sciences University
Department of Food Processing and Engineering
MS in Food Processing and Engineering Final Examination
July-December Semester Final Examination, 2020

Subject Code & Title: NFT-502, Novel Food Processing Techniques

Total Marks = 40

Time = ~~60 min~~ 2 hour

(Figures in the right margin indicate full marks. Answer any **Four** questions, Split answer is not allowed)

1. a) Define organic farming. Give a brief discussion on organic food preservation techniques. 5
- b) How edible coating preserve food? Describe the coating techniques in surface treatment preservation method. 5
2. a) Define High Pressure Processing and describe the principles of High Pressure Processing with application. 5
- b) Explain with flow chart the principle of Pulse Electric Field Processing. Outline the main processing parameter of Pulse Electric Field Processing. 5
3. a) Novel Processing techniques deviate the properties of processed foods, Some foods are processed by using ultrasound. Give your opinion that what type of effects has the ultrasound on food properties. 5
- b) Illustrate in brief the product quality degradation during dehydration. 5
4. a) Define Osmotic Membrane Distillation (OMD). Enumerate in brief the effect of different process parameters on mass transfer during osmotic dehydration. 6
- b) What do you mean by the term 'Encapsulation'? How Radio Frequency Electric Field chamber can be configured for food processing? 4
5. a) Discuss the role of applying novel food processing techniques for preserving nutritive value of food. 5
- b) Mention Dielectric properties of food and discuss the application of Microwave processing for Food. 5

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**Subject Title: Advanced Unit Operations in Process and Food
Engineering**

Subject Code: AUP-502

Total Marks = 40

Time = ~~60 min~~ 2 hour

(Figures in the right margin indicate full marks. Answer any **Four** questions, Split answer is not allowed)

1. a) Give an overview of an Engineering Process in unit operation. 5
b) Differentiate between fluid statics and fluid dynamics. Discuss the concept of D-value and concept of Z-value. 5
2. a) Define pump. Explain the operating principle of a centrifugal pump with advantage. 5
b) Enumerate in brief the concept of commercial sterility. Explain the improved general methods for thermal process calculation of canned foods. 5
3. a) Mention the factors affecting size reduction. Write down the artificial process of crystallization. 4
b) Enumerate in brief the basic concept of following process: 2x3=6
 - i) Evaporation process,
 - ii) Pasteurization process,
 - iii) Suppressed boiling type evaporation.
4. a) Illustrate in brief the mixing classification and different mixing equipment. 5
b) Describe the Testing and Methods of Analysis. Also describe the principle and application of electrophoresis. 5
5. Write down the following topics (any four): 2.5x4=10
 - i) Principle of Refractometry,
 - ii) Principle of Flame photometry,
 - iii) Principle of Mass Spectroscopy,
 - iv) Various methods of sampling,
 - v) Principle of atomic absorption spectroscopy.

Chittagong Veterinary and Animal Sciences University
MS in Food Processing and Engineering
July- December Semester 2020 Final Exam
Course Title: Fermentation and Food Biotechnology
Course code: FFB- 502

Total Marks: 40

Time: 2 hour

Answer any four (04) questions. Figures in the right margin indicate full marks.

1. a. Briefly describe the influence of physical factors on microbial environment? 04
b. Give an overview about the basic principles involved in the operation of microbial processes? 06
2. a. Discuss the application of biotechnology in food and beverage sectors? 06
b. Explain the requirements for designing a fermentor? 04
3. a. Appraise the role of repartitioning agents in quality meat production? 05
b. Explain bioconversion and secondary metabolite production? 05
4. a. Restate RFLP? Discuss the role of PCR for food quality improvements? 05
b. Assess the influence of consumer on food quality? 05
5. a. Give an overview about the application of biosensors? 05
b. Briefly describe the features of fluidized bed reactor? 05