

Chittagong Veterinary and Animal Sciences University
MS in Food Processing and Engineering
July- December Semester 2019 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 chemical factors on the microbial environment? 04
b. Give an overview of the basic principles involved in the operation of microbial processes? 06
2. a. Discuss the application of biotechnology in amino acids and vitamins? 06
b. Explain the requirements for designing a bioreactor? 04
3. a. Appraise the role of repartitioning agents in quality meat production? 05
b. Explain the production of food processing enzymes by recombinant DNA technology? 05
4. a. Restate RFLP? Discuss the role of PCR for food quality improvements? 05
b. Assess the factors determining food quality? 05
5. a. Give an overview of the application of biosensors? 05
b. Briefly describe the features of the photobioreactor? 05

Chattogram Veterinary and Animal Sciences University
MS in Food Processing and Engineering July-December, 2019
Department Food Processing and Engineering
Course Title: Novel Food Processing Techniques
Course Code: NFT – 502

Answer any four (04) questions from the following. Split answer is not allowed.

Marks: 40

Time: 2 hours

1.
 - a. Define organic farming. Give a brief discussion on organic food preservation techniques. 05
 - b. Make a conceptual framework on differentiation of surface treatment and edible coating. Enumerate the materials used in edible coating and film formation. 05

2.
 - a. Illustrate the mechanisms of action of Pulse Electric Field treatment system. 05
 - b. Discuss about the factors affecting osmotic dehydration. 05

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. 05
 - b. State the principle of high pressure processing techniques. 05

4.
 - a. What do you mean by the term 'Encapsulation'? Enlist the ingredients of encapsulation with their applications. 05
 - b. Briefly discuss about the advantages of organic food. 05

5.
 - a. Define HPP. Illustrate the effects of HPP on food quality. 05
 - b. Discuss about the scientific approaches for implementing ultrasound technique in food industry. 05

Chittagong Veterinary and Animal Sciences University
MS in Food Processing and Engineering Final Examination
July- December Course Semester, 2019

Course Code: BUW-502

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

Full mark: 40

Time: 2 hours

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

1. a. Define byproduct. Illustrate the feasible byproducts produced from fruit and vegetables waste. 4
- b. How and why novel bioactive extraction technologies are convenient than conventional extraction techniques? 3
- c. Make a list of possible bioactive compounds that can be extracted from fruits and vegetables waste. 3
2. a. Enumerate in brief the by-product can be obtained from fish and explain their utilization in different sector. 5
- b. Discuss shortly the “Green extraction techniques” using for extraction of biomolecules found in the seafood by-products. 5
3. a. Write down the biological activities of fruits by-products and their extracts. 5
- b. Make a catalog of the main bioactive compounds extracted from grapes and pomegranate by-products. Are they a valuable source for food applications? 5
4. a. Find out the by-products from fish and briefly describe their composition. 2
- b. What are the industrial use of fish by-product? 4
- c. Investigate the main applications of resulting compound from fish by-products fermentation. 4
5. a. “Enzymatic hydrolysis of agro-industrial by-products is a promising tool for substrates development”- authenticate this statement. 6
- b. Explore the effects of food matrix and molecular weight of polyphenols on polyphenol bioavailability. 4

Chittagong Veterinary and Animal Sciences University
MS in Food Processing and Engineering
July-December Semester Final Examination, 2019
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. What do you mean by CSW and RSW? Differentiate chilling and freezing. **2.0**
- b. Briefly discuss the physical losses occur during the processing of fish products. **4.0**
- c. Enumerate the composition of fish meal. Elucidate the production methods of fish meal. **4.0**
2. a. How tenderness affects the eating quality of meat? Describe some methods of tenderization. **4.0**
- b. Why and how curing of meat is done? Explain. **3.0**
- c. Discuss the prophylaxis against microbial contamination of meat. **3.0**
3. a. Describe the slaughtering process of poultry product. **4.0**
- b. Illustrate and identify different parts of an egg. **2.0**
- c. What are the reasons behind the deterioration of the quality of an egg? **4.0**
4. a. Define dried milk. Mention the composition of dried milk. **2.0**
- b. Illustrate the flow diagram of the manufacturing process of whole milk powder and skim milk powder. **3.0**
- c. Highlight the constituents of market milk. Explain the influencing factors of the composition of milk. **5.0**
5. a. What are the advantages of ice to use in chilling process? **1.0**
- b. Mention any 6 major defects of cheddar cheese with their causes and prevention. **3.0**
- c. Describe the production process of dry sausage with the safety issues needed to concern during sausage production. **6.0**

Chittagong Veterinary and Animal Sciences University
MS in Food Processing and Engineering
July-December Semester Final Examination, 2019
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. Define functional foods and nutraceuticals. Classify nutraceuticals (based on source) and functional foods. **4.0**
- b. Elaborately explain the data required for designing functional foods. **4.0**
- c. List up some functional foods with their benefit claims, which are available in the market. **2.0**
2. a. Write down short notes on terpenoids and phenolic compounds. **5.0**
- b. When and why water becomes low polar? **2.0**
- c. Summarize membrane separation processes with their characteristics. **3.0**
3. a. Define probiotics, prebiotics and symbiotics with example. Why yoghurt is called probiotic product? **4.0**
- b. What do you mean by essential oil? Give 2 examples of essential oil. **1.0**
- c. Why SCCO_2 is chosen in supercritical fluid (SCF) extraction? Discuss single-stage SCF extraction technique to extract bioactive compounds. **5.0**
4. a. Illustrate a bacterial growth diagram based on the interaction of pH and a_w . Classify foods based on pH and a_w according to the regulations of FDA GMP. **3.0**
- b. Briefly explain how pH affects the food components. **5.0**
- c. Why vacuum fractional distillation is beneficial over steam distillation? **2.0**
5. a. Write down a short note on nitrite as antimicrobial aspect. **3.0**
- b. Mention the nutritional compounds of olive oil. Discuss some health benefits of olive oil. **4.0**
- c. Enumerate the processing steps and evaluation parameters to address critical aspects in design, development and marketing of functional foods. **3.0**

Chittagong Veterinary and Animal Sciences University
MS in Food Processing and Engineering Final Examination

July- December Semester, 2019

Course Code: AUP-502

Course Title: Advanced Unit Operations in Process and Food Engineering

Full mark: 40

Time: 2 hours

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

1. a. What is the purpose of material and energy balance? Draw a typical input output diagram for a process and indicate the various energy inputs. 5
b. Skim milk is prepared by the removal of some of the fat from whole milk. This skim milk is found to contain 90.5% water, 3.5% protein, 5.1% carbohydrate, 0.1% fat and 0.8% ash. If the original milk contained 4.5% fat, calculate its composition assuming that fat only was removed to make the skim milk and that there are no losses in processing. 5
2. a. How Sankey diagram is useful for energy analysis? Figure out energy balance for a reheating furnace by showing a Sankey diagram. 5
b. Potatoes are dried from 14% total solids to 93% total solids. What is the product yield from each 1000 kg of raw potatoes? Assuming that 8% by weight of the original potatoes is lost in peeling. 5
3. a. Describe briefly the basic pumps are used for liquids with proper illustration. 4
b. Illustrate heat balance for a process. 2
c. The pressure in a vacuum evaporator was measured by using a U-tube containing mercury. It was found to be less than atmospheric pressure by 25cm of mercury. Calculate the extent by which the pressure in the evaporator is below atmospheric pressure (i.e. the vacuum in the evaporator) in kPa, and also the absolute pressure in the evaporator. The atmospheric pressure is 75.4cm of mercury and the specific gravity of mercury is 13.6. 4
4. a. Briefly describe the rice bran oil refining process. 3
b. What is the basic principle of a heat exchanger? Classify and illustrate heat exchangers according to the direction of fluid flow. 4
c. Discuss the types of mixer used for powder product in a food industry. 3
5. a. Short notes on: i) Jacketed pan heat exchanger. ii) heating coil in liquid heat exchanger. iii) Scraped surface heat exchanger and iv) plate heat exchanger. 6
b. Enumerate in brief the grinding equipment used in food industry. 4