

Chittagong Veterinary and Animal Sciences University
MS in Food Processing and Engineering Final Examination, 2016
July -December Semester, 2016

Course Title: Advanced Unit Operations in Process and Food Engineering

Course Code: AUP-502, Full mark: 40, Time: 2 hours

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

1. a. State the basic concept of heat balance. Narrate the method for preparing process flow chart with example. 4
b. i) Categorize the intrinsic energy changes of fluid flow. 6
ii) Pump horsepower water is raised from a reservoir up 35 m to a storage tank through a 7.5 cm diameter pipe. If it is required to raise 1.6 cubic meters of water per minute, calculate the horsepower input to a pump assuming that the pump is 100% efficient and that there is no friction loss in the pipe.
2. a. Define pump. Explain various Positive Displacement pump behavior with advantages. 4
b. Enumerate in brief the application of commercial sterility. Explain the general methods for thermal process calculation of canned foods. 6
3. a. Mention the mechanism of Size Reduction. Write down factors affecting size reduction. 4
b. Enumerate in brief the basic concept of following process : 6
i) pasteurization process,
ii) evaporation process and
iii) suppressed boiling type evaporation.
4. a. Define slurry, filter medium, filter cake and filtrate. Explain different types of filter media. 5
b. Illustrate the following terms : i) solid liquid equilibrium process , 5
ii) differential extraction process and
iii) crystallization process.
5. a. Write down the following terms (any four) : (2.5x4)
i) various methods of sampling, =10
ii) Principle of atomic absorption spectroscopy,
iii) principle of Flame photometry,
iv) principle of Mass Spectroscopy,
v) Enzyme immunoassays.
vi) Principle of Polymerase Chain Reaction.

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MS in Food Processing and Engineering Final Examination
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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. Explain implementation of the waste hierarchy concept in relation to food processing co-products and wastes. **5.0**
b. Enlist approaches to enhance environmental supply chain management. Tabulate a hierarchy of waste minimization approaches. **5.0**
2. a. Briefly describe good housekeeping recommendations for specific food industries to reduce waste. **5.0**
b. Describe the methodologies for waste water handling. **5.0**
3. a. Write down the importance of microbiological risk management in the stabilization of co-products. Describe the strategies for microbiological risk management. **5.0**
b. Explain different theories of various physical and chemical separation technologies. **5.0**
4. a. How trimmings and pulps from fruit and vegetable processing can be recovered and reused? **5.0**
b. Write down the potential uses of waste derived from fish and fishery products. **5.0**
5. a. Explain activated sludge process and trickling filter system in industrial waste treatment. **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**

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Course Code: RFL-502

Course Title: Risk assessment and International Food Legislations

Full mark: 40

Time: 2 hours

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

1. a. Enumerate in brief the sensory characteristics of food. 6
b. Explain briefly the following terms : i) Microbiological quality classification and 4
ii) Microbiological test.
2. a. Describe the principle method of determination of food quality and main 5
dimensions of quality. Explain the functions and activities of quality control
department in relation.
- b. Define food inspection and GMP. Give a general outline for sampling 5
methodologies.
3. a. What is the Certification process of ISO? Are food adulteration and misbranding 5
of foods same? - Justify your answer.
- b. Enumerate the basic quality management principles of ISO 9000 series. 5
4. a. Illustrate the appropriate process of designation of food additives. How food may 5
deem to be misbranded?
- b. Illuminate the importance of product information and consumer awareness. Discuss 5
the benefits of halal certification.
5. a. Clarify the major aims and objectives of Consumers Association of Bangladesh 5
(CAB).Mention the main function of BSTI.
- b. Describe about the Joint FAO/WHO food standards program- Codex Alimentarius. 5

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Course Title: Novel Food Processing Techniques

Course Code: NFP-502

Full mark: 40, Time: 2 hours

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

1. a. Enumerate in brief the marketing strategy of organic food. Mention the basic steps of organic farm certification. 5
b. Explain with flow chart the techniques of Microencapsulation. 5
2. a. Define High Pressure Processing and describe the Principles of High Pressure Processing with heat and mass transfer modeling. 5
b. Describe the main processing parameter of Pulse Electric Field Processing with mechanism of action. 5
3. a. Write down the advantages of edible coatings and permeability properties of coating. 5
b. Give an overview of hybrid drying technologies classification. 5
4. a. Explain in brief the mechanism of Osmotic Dehydration and Osmotic Membrane Distillation. Also mention the common configuration of various membrane modules. 5
b. How Radio Frequency Electric Field chamber can be configured for food processing? Show in tabular form the applications of Ultrasound in Food Processing. 5
5. a. Discuss the principle and application of microwave heating for food. Give a brief description on fundamentals of Ohmic Heating. 5
b. Give the standard definition of special products. Discuss the role of applying novel food processing techniques for preserving nutritive value of food. 5

Chittagong Veterinary and Animal Sciences University
MS in Food Processing and Engineering Final Examination
July- December Semester 2016
Course Title: Fermentation and Food Biotechnology
Course Code: FFB-502
Total Marks: 40 Time: 2 hours

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

1. a. State the concept of food biotechnology. Categorize foods according to modern biotechnology. 5.0
b. How nucleic acids are separated and purified from the cell lysates? 5.0

2. a. What is DNA? Explain in brief the structure of DNA? 5.0
b. How does DNA replicate? 5.0

3. a. Briefly describe the modification of restriction fragments ends. 5.0
b. Which culture technique is most widely used for the generation of virus free plants and why? 5.0

4. a. What's the molecular mechanism undergoing *Agrobacterium* mediated transformation? 5.0
b. How can you differentiate between Genomic Library and cDNA Libraries? 5.0

5. a. Write down the characteristics of an ideal cloning vector. Draw a schematic structure of the most widely used cloning vector in genetic engineering technique. 5.0
b. What do you mean by PCR? Describe the principles and procedure of PCR? 5.0

Chittagong Veterinary and Animal Sciences University
MS in Food Processing and Engineering Final Examination
July- December Semester 2016
Course Title: Advanced Technology of Animal Products
Course Code: ATA-502
Total Marks: 40 Time: 2 hours

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

1. a. Differentiate between a) Red Meat and White Meat b) PSE and DFD Meat **5.0**
b. What are the major post mortem changes occur in muscle of meat animals? **5.0**
2. a. Describe the ante-mortem and postmortem inspection of carcass. **5.0**
b. What is meat quality? What are the main factors that affect meat quality? Describe organoleptic parameters of meat. **5.0**
3. a. Describe different slaughtering techniques for meat animals. **5.0**
b. How to evaluate the internal and external quality of egg? **5.0**
4. a. Write short notes on: (Any two) **5.0**
 - i. Cooked Ham
 - ii. Cooked Sausages
 - iii. Bacon
 - iv. Raw fermented Salami
b. Explain the theories of butter churning process. Illustrate a flow sheet of butter making process. **5.0**
5. a. Describe the quality changes in fish during different stages of handling, transportation, preservation and processing. **5.0**
b. What is fish protein concentrate (FPC)? How does FPC differ from fish meal? **5.0**

Chittagong Veterinary and Animal Sciences University

Dept. of Applied Food Science and Nutrition

MS in Applied Human Nutrition and Dietetics

July- December Final Examination, 2016

Course Name: Nutrition in Emergencies

Course Code: NUE-502

Full Marks: 40, Time: 2 hours

Answer any Four (4) questions from the listed below

1. a) Define Nutritional Emergency. 2
- b) What are the causes of Nutritional Emergency in our country? 3
- c) Give an account of historical perspectives of the disaster situation in context of Bangladesh. 5
2. a) Discuss the role of nutritional, health and socioeconomic data on early warning. 5
- b) Draw and narrate the framework for disaster relief-needs assessment. 5
3. a) What is disaster management? 2
- b) Enumerate the role of a Nutritionist in Disaster Management. 3
- c) Outline a design of a nutrition intervention program in a community. 5
4. a) List out the name of different types of emergency feeding program. 2
- b) Give a summary of General Food distribution and Therapeutic Feeding. 3+3
- c) What types of nutrient deficiencies may be occurred during emergency? 2
5. a) How do you can assess nutritional status of mass people during emergency? 3
- b) Describe the role of government and non – government organization in mitigating nutrient deficiency in a disaster prone area. 7