Chittagong Veterinary and Animal Sciences University
MS in Food Processing and Engineering Final Examination
July- December Semester, 2015

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. Find out the minimum requirements for hygienic production and quality standards for processing of the fruit product. 6

   b. Explain briefly "The Prevention of Food Adulteration Act, 1954". 4

2. a. What do you know about the ISO 9000 series: Quality management principles? 5

   b. Define food products specification. Give a general outline for a product design specification? 5

3. a. Are food adulteration and misbranding of foods same? - Justify your answer. 4

   b. Enumerate the basic requirements for food product lot identification and traceability systems. 3

   c. Illuminate the importance of consumer information to preventing food borne illness caused by food product mishandling. 3

4. a. Define "critical tracking events" and "key data element". Give examples of critical tracking events in the supply chain and list the key data elements that should be available for each material, ingredient or finished product. 6

   b. Discuss the benefits of halal certification. 4

5. a. Clarify the major aims and objectives of Consumers Association of Bangladesh (CAB). 4

   b. What is the Certification process of ISO? 3

   c. Describe about the Joint FAO/WHO food standards program- Codex Alimentarius. 3

Chittagong Veterinary and Animal Sciences University

MS in Food Processing and Engineering Final Examination

July- December Semester 2015

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? What are animal by-products? Categorize animal by-products which are based on their potential risk to the animals, the public or to the environment. **5.0**

   b. How animal by-products are commercially utilized? 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? What parts of the fish are used to make the oil? Write down the potential uses of waste derived from fish and fishery products. **5.0**

3. **a**. What are the different types of waste? Enlist unit operations and unit processes for waste water treatment? What are the common methods of waste disposal? **5.0**

   b. What do you mean by water hardness? How temporary and permanent water hardness can be removed? **5.0**

4. **a.** Explain activated sludge process and trickling filter system in industrial waste treatment. What is the difference between aerobic and anaerobic processes? **5.0**

   b. Write short notes on (any five): Hazardous waste, wastewater, process wastewater, maintenance wastewater, ponds and lagoons and ETP. **5.0**

5. **a.** What are the properties and requirements of processing waters? What do DO, BOD, and COD stand for? Can we use water if the BOD value of water is high? **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**

Chittagong Veterinary and Animal Sciences University
MS in Food Processing and Engineering Final Examination
July- December Semester, 2015

Course Code: ATA-502

Course Title: Advanced Technology of Animal products

Full mark: 40 Time: 2 hours

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

1. a. Differentiate between food adulteration and food poisoning. Find out the sign and symptoms of food poisoning by fish and fishery products. 6

   b. How to determine the quality and freshness of fish and seafood? 4

2. a. What is fish protein concentrate (FPC)? Is FPC the same as fish flour?-Justify your answer. 4

   b. How does FPC differ from fish meal? 3

   c. How might you utilize fish by-products in the Gelatin Industry? 3

3. a. Discuss about the grading of poultry to maintain quality standards. 4

   b. Enumerate in brief the packaging system of poultry meat. 3

   c. Short note on poultry cut-up parts. 3

4. a. Describe briefly about the hygiene practices that performed in meat industry. 4

   b. Short notes on: i) Restructured meat product, ii) Meat analogues and iii) Intermediate moisture meat products. 6

5. a. How to evaluate the internal and external quality of egg? 6

   b. Define yolk index. How to find yolk index? 4

Chittagong Veterinary and Animal Sciences University
MS in Food Processing and Engineering Final Examination
July- December Semester 2015
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 generation time. Categorize foods according to modern biotechnology. **3.0**

   b. What is the first step of gene expression? Briefly describe the phases of transcription and translation. **7.0**

2. **a.** How nucleic acids are separated and purified from the cell lysates? **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? How haploid plants can be produced? **5.0**

4. **a.** What's the molecular mechanism undergoing *Agrobacterium* mediated transformation? **5.0**

   b. Illustrate the production of baker's yeast from the molasses and its recovery and purification with industrial application. **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. Narrate the biological methods of gene transfer which are usually observed in microorganisms with labeled diagram. **5.0**

Chittagong Veterinary and Animal Sciences University

MS in Food Processing and Engineering Final Examination, 2015

July-December Semester, 2015

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 main ingredients of encapsulation with their application. 5

   b. Explain ten reasons to go organic/advantages of Organic foods. 5

2. a. Define High Pressure Processing and describe Principles of different operations of High Pressure Processing. 5

   b. How edible coating preserve food? Describe coating techniques in surface treatment preservation method. 5

3. a. Describe the principles of Pulse Electric Field Processing with flow chart and application of Pulse Electric Field Processing. 5

   b. Illustrate in brief the product quality degradation during dehydration. 5

4. a. Explain in brief the mechanism of Osmotic Dehydration. Also mention the applications of Osmotic Membrane Distillation. 5

   b. How Radio Frequency Electric Field Processed foods? Show in tabular form the applications of Ultrasound in Food Processing. 5

5. a. Discuss the Dielectric Heating and Ohmic Heating. Give a brief description on application, advantages and disadvantages of Ohmic Heating. 5

   b. Mention Dielectric Properties of food and discuss the application of Microwave Processing for Food. 5

Chittagong Veterinary and Animal Sciences University

MS in Food Processing and Engineering Final Examination, 2015

July -December Semester, 2015

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. Give an overview of an Engineering Process in unit operation. 4

   b. Define Atomization. Describe the effects of Pasteurization on Foods. 6

2. a. Define pump. Explain Positive Displacement pump behavior with advantages. 5

   b. Discuss D, F, Z and F value. Illustrate the principles of thermal processing. 5

3. a. Mention the factors affecting Size Reduction. Write down the artificial process of Crystallization. 5

   b. Enumerate in brief the mixing classification and different mixing equipment. 5

4. a. Define Filter Cake. Explain the applications of Filtration. 5

   b. Illustrate the Testing and Methods of Analysis. Also describe the Principle and Application of electrophoresis. 5

5. a. Write down the principle, applications and uses of flame photometry. 5

   b. Enumerate in brief the Principles of Refractometry and chromatography. 5