

**Chittagong Veterinary and Animal Sciences University**  
**Faculty of Food Science and Technology**  
**BFST 2nd year 2nd Semester Final Examination 2016**  
**Subject: Technology of Meat Products (Theory)**  
**Course Code: TMP-202**

**Full Marks: 70**

**Time: 3 hours**

Figures in the right margin indicate full marks. Answer any **three (3)** questions from each section where questions no **1** and **5** are compulsory. Use separate answer script for each section. Split answer is discouraged.

**SECTION-A**

- |    |    |  |   |
|----|----|--|---|
| 1. | a) | Define beef and chevon. Compare and contrast between beef and chevon.                | 3 |
|    | b) | State the prospects of meat industry in Bangladesh.                                  | 4 |
|    | c) | Outline the constraints of meat industry and specify the remedies in Bangladesh.     | 4 |
| 2. | a) | List and illustrate the fresh composition of beef muscle.                            | 4 |
|    | b) | Illustrate the per-slaughter care of beef cattle.                                    | 4 |
|    | c) | Outline the signs of good health of indigenous cattle during ante-mortem inspection. | 4 |
| 3. | a) | What is yield grade? Discuss shortly the yield grade 1 to yield grade 5.             | 4 |
|    | b) | Write in brief the factors affecting beef yield.                                     | 4 |
|    | c) | Write short notes on dressing percentage of meat.                                    | 4 |
| 4. | a) | List the wholesale cuts of beef with percentage.                                     | 4 |
|    | b) | What is preservation of meat? List the methods of curing meat.                       | 4 |
|    | c) | Why are used salt, nitrite and sugar to cure meat?                                   | 4 |

**SECTION-B**

- |    |    |   |            |
|----|----|---|------------|
| 5. | a) | Define 'meat products' and 'meat processing plants'. Briefly discuss the meat consumption habits in different regions of the world. Mention the name of indigenous stock of meat animals in Bangladesh. | 5          |
|    | b) | Briefly discuss different protein structures of meat with their specific importance in meat technology.   | 3          |
|    | c) | Write down the statistics of demand and supply of meat per head, meat animal and annual meat production in Bangladesh.  | 3          |
| 6. | a) | Write down the mechanism of PSE meat formation through anaerobic catabolism of the storage polysaccharide of muscle. How will you utilize PSE and DFD meat in meat industry?                            | 5          |
|    | b) | What are the adverse health consequences of high amount of animal fat and red meat consumption?   | 4          |
|    | c) | Explain the importance and values of meat in human diet.  | 3          |
| 7. | a) | What is ritual slaughter? Briefly state the rules of different ritual slaughters with advantages and disadvantages.   | 5          |
|    | b) | State the packaging system that you should adopt to maintain bright cherry red color of fresh beef.   | 4          |
|    | c) | Differentiate MDM from normal meat in a tabular form.   | 3          |
| 8. |    | Write short notes from the followings (any 3):  | 4 x 3 = 12 |
|    | a) | Conditioning and tenderization of meat.   |            |
|    | b) | Different steps of poultry processing for obtaining hygienic meat.  |            |
|    | c) | Cleaning and disinfection procedure of meat plant.  |            |
|    | d) | Categories of processed meat products.  |            |
|    | e) | Non-meat ingredients and their functional classification.   |            |

**Chittagong Veterinary and Animal Sciences University**  
**Faculty of Food Science and Technology**  
**BFST 2<sup>nd</sup> year 2<sup>nd</sup> Semester Final Examination, 2016**  
**Subject: Nutritional Evaluation of Processed Food**  
**Course Code: NFP-202**

**Full Marks: 70**

**Time: 3 hours**

(Figures in the right margin indicate full marks. Answer any 4 questions from each section where question no. 1 and 6 are compulsory. Use separate answer script for each section. Split answer is strongly discouraged.)

**Section-A**

1. a) Define nutritional evaluation of food processing. 2  
b) Why is appropriate nutrition assessment important in food processing? 3
2. a) What are the basic principles of food processing for preservation? Classify the processed food. 4  
b) Explain the different food processing methods used in modern world to preserve the food. 6
3. a) Why is thiamin heat and sulfur sensitive? 3  
b) Write the effects of commercial processing on milk and milk products. 4  
c) How do vitamin A and vitamin C degrade during oxidation? 3
4. a) What is meant by food packaging? 2  
b) What types of packaging materials are used in food industry? 3  
c) "Packaging adds value to consumer products"- Justify the statement. 5
5. a) Give an overview of known poly-phenols involved in browning of foods. 2  
b) Briefly describe the mechanism of enzymatic browning reaction. 3  
c) Write down the advantages and disadvantages of processed food. 5

**Section-B**

6. a) Differentiate between enrichment and fortification. State the principles for addition of nutrients to food by Codex Alimentarius Commission. 5
7. a) Describe the Maillard reaction. 5  
b) How do you control the Maillard reaction during food processing? 3  
c) List the factors that affect the Maillard reaction during food processing. 2
8. a) Explain the pathway of Ascorbic acid browning. 3  
b) How do you minimize the loss of number of nutrients during preparation of food at home? 5  
c) What do you mean by caramelization of sucrose? 2
9. a) Narrate the impact of climate changes on crop production. 5  
b) Describe the post-harvest losses of cereal grains at various stages of processing. 5
10. Write down short note on the followings  
i. UHT and Blanching 4  
ii. Adverse effects of freezing on fruits 3  
iii. Fermentation 3

(Figures in the right margin indicate full marks. Answer any four (04) questions from each section where question no. 1 and 6 are compulsory. Use separate answer scripts for each section. Split answers are not allowed.)

### Section-A

1. Write down the structures of followings: 5
  - a) Amylopectin
  - b) Hyaluronic acid
  - c) Triglyceride
  - d) Sucrose
  - e) Cysteine
  
2.
  - a) Briefly explain the chemistry and functions of the following vitamins: A, E, B<sub>2</sub> and B<sub>12</sub>. 6
  - b) Differentiate between osteoporosis and osteomalacia. 2
  - c) Why vitamin C is important for human skin? 2
  
3.
  - a) Define the following terms: Aroma, Odour and Scent. 3
  - b) Enlist the name of common food flavours with their characteristic key chemicals. 4
  - c) Classify pigments with example. 3
  
4.
  - a) What are the essential fatty acids? Why these are important? 2
  - b) Illustrate the different major lipid components. 5
  - c) By graphical representation describe the three steps of peroxidation. 3
  
5.
  - a) Draw two diagrams of RO system. 2
  - b) What do you mean by water hardness? Explain the negative effects of hard water in food industry. 4
  - c) Draw a pictorial diagram of water treatment plant. 4

### Section-B

6. Briefly explain the social roles of a food chemist. 5
  
7.
  - a) What do you mean by dietary fiber? 1
  - b) Explain the titrimetric, gravimetric and enzymatic methods of carbohydrate analysis. 6
  - c) Write down the chemistry of browning reactions. 3
  
8. Describe the following terms:
  - a) Hydrolysis of protein 4
  - b) Degradation of protein 3
  - c) Nutritional classification of protein 3
  
9.
  - a) Explain the mechanisms of Arsenic poisoning in ground water. 3
  - b) Shortly narrate the common toxic mechanisms and sites of action of heavy metals in human body. 5
  - c) Enlist common sources of Arsenic (As), Chromium (Cr) and Lead (Pb). 2
  
10. Write short notes on:
  - a) Inter esterification 3
  - b) Water purification 3
  - c) Gelatinization and retro gradation 4

**Chittagong Veterinary and Animal Sciences University**  
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**BFST 2<sup>nd</sup> year 2<sup>nd</sup> Semester Final Examination 2016**  
**Subject: Food Plants Design, Layout and Management (Theory)**  
**Course Code: PDL-202**

**Full Marks: 70**

**Time: 3 hours**

(Figures in the right margin indicate full marks. **Answer any four (4) questions** from each section where **question no. 1 and 6 are compulsory**. Use separate answer script for each section. **Split answer is not allowed.**)

**Section-A**

1. Give the standard definition of food plants, plant design and plant layout. How you can manage (control) your food industry as a food technologist? 5
2. a) Enumerate in brief the basic principles of sanitary design. Differentiate between cleaning and disinfection. 5  
 b) Define hygiene. What are the legal aspects necessary to ensure good design of a building? 5
3. a) Discuss elaborately Good House Keeping practice used in the food industry. Briefly explain the regulations of Order and Safety. 5  
 b) Explain 5 'S' Japanese words for good housekeeping. How you can analyze material handling operations? 5
4. a) Mention the functions of screw conveyor. Describe bucket elevator and develop equation for determining capacity and horse power. 6  
 b) With the help of flow diagram differentiate the food service system between conventional and centralized. 4
5. a) Define Break even point. How can you construct a Break even chart? 4  
 b) What are the types of impurities are found in water purification. Describe coagulation and flocculation method for water treatment with figure. 6

**Section-B**

6. Give an Organization Structure of a milk processing plant. How would you assess cleaning operations? 5
7. a) Mention the unique characteristics of food service. Differentiate between COP and CIP of wet cleaning. 5  
 b) What are the stages of digestion of anaerobic system? If a horizontal screw conveyor's capacity is 12 kg/sec, length of the conveyor is 10 ft and material factor is 0.4. Find the Hp requirement of the conveyor. 5
8. a) What are the rules should be followed for equipment design and installation. 5  
 b) Consider the need to mix a quality feed that meets the following criteria. 5
  - (i) Contains at least 3 lbs of fat,
  - (ii) Contains no more than 5 lbs of fibre,
  - (iii) Contains at least 2 lbs of protein.

Assume that there are two ingredients (A, B) available to produce the desired feed. The following table shows the characteristics of these ingredients including cost/lb. Find out a least cost mix satisfying above criteria.

**Characteristics of two feed ingredients:**

One pound of A	One pound of B
Contain 0.4 lb fat	Contain 0.2 lb fat
Contain 0.4 lb of fibre	Contain 0.5 lb of fibre
Contain 0.2 lb protein	Contain 0.3 lb protein
Cost 30 cents	Cost 20 cents

9. a) Define plan, planning, scheduling and controlling. Describe fixed cost and variable cost with proper example. 5
- b) Consider a company selling 500000 units at a price of taka 1.5 per unit where variable cost per unit is tk 1.00 and fixed cost is tk 100000. Construct a break even chart and indicate the profit. Also show what happens to profit when fixed cost becomes tk 200000. 5
10. a) Define chemical conditioning and thermal conditioning. Describe the ultimate sludge disposal treatment for solid waste. 5
- b) Define the following terms: 5
- i) Dismantling,
  - ii) Sanitizer,
  - iii) Sequestering agent,
  - iv) Chelating agents.

**Chittagong Veterinary and Animal Sciences University**  
**Faculty of Food Science and Technology**  
**BFST 2<sup>nd</sup> year 2<sup>nd</sup> Semester Final Examination 2016**  
**Subject: Cereal and Legume Technology (Theory)**  
**Course Code: CLT-202**

**Full Marks: 70**

**Time: 3 hours**

(Figures in the right margin indicate full marks. **Answer any four (4) questions** from each section where **question no. 1 and 6 are compulsory**. Use separate answer script for each section. **Split answer is not allowed.**)

**Section-A**

1. Discuss the goals and importance of cereal and legume Technology education. Write down the guideline of developing nutritional message. 5
2. a) Describe the principles of parboiling of rice. Mention the advantages of parboiling. 5  
b) Enumerate in brief the various quality characteristics of rice. What are the primary basis for rice quality for cooking and processing behavior? 5
3. a) Give the diagram of wet milling process of pulses and describe the main uses of pulses in Bangladesh. 5  
b) Enumerate the uses and properties of starch. 5
4. a) Write down the industrial utilization of maize. Differentiate between Breakfast cereal and Ready-to-eat products. 4  
b) Explain in brief "What are the benefits of drinking soymilk as compared to cow's milk"? 6
5. a) Define Extraction rate of flour. What are the objectives of flour milling? How does it differ from rice milling procedures? 5  
b) Describe in brief the various bleaching agents which are usually used for treatment of wheat flour. 5

**Section-B**

6. Why high nitrogenous barely is unsuitable for malting? Differentiate between ale beer and lager beer. 5
7. a) Elaborate the malting operation for beer production. 5  
b) What are the physiological changes occur during storage of grain. Mention the major variables that cause various changes and deteriorations in food grains during storage. 5
8. a) Explain wheat quality from grower to consumer. With neat sketches describe the functions of Brabender Farinograph. 5  
b) What are the traditional methods of rice milling? Describe in brief the modern methods of rice milling. 5
9. a) Define premix. How can you overcome the damage during drying process? 4  
b) Briefly mention the utilization of rice husk. Describe the artificial method of rice enrichment with proper specification. 6
10. a) Describe the following tests for rice quality: i) Water uptake test, 6  
ii) Amylose Content,  
iii) Alkali test.  
b) Write short notes on the following terms: i) Rice polishing equipment, 4  
ii) Under Runner Disc Sheller.

**Chittagong Veterinary and Animal Sciences University**  
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**BFST 2<sup>nd</sup> year 2<sup>nd</sup> Semester Final Examination 2016**  
**Subject: Baking and Confectionary Technology (Theory)**  
**Course Code: BCT-202**

**Full Marks: 70**

**Time: 3 hours**

(Figures in the right margin indicate full marks. Answer any four (4) questions from each section where question no. 1 and 6 are compulsory. Use separate answer script for each section. Split answer is not allowed.)

**Section-A**

1. Define snack food, fast food. Mention their impact to maintain good health. 5
2. a) How baking ingredients works during baking? What are the main principles of baking? 5  
b) Define leaving agent. Narrate the principles of yeast leaving baking process. 5
3. a) Shortly describe the products and by products of flour milling industry. 4  
b) Give an overview about the tests for baking quality of wheat flour. 6
4. a) Illustrate the manufacturing process of bread. Give the formulation of salted biscuit. 6  
b) Classify the oven with different characteristics and uses. 4
5. a) What do you mean by cake butters? Differentiate between sugar butter and flour butter. 4  
b) Give an overview about the causes of defects in bakery foods. How can you solve these defects? 6

**Section-B**

6. Briefly discuss the GMP that is performed during the production of baking and confectionary products. 5
7. a) Is rice flour used for baking purpose? Highlight the merits and demerits of rice flour. 4  
b) Show the manufacturing process of cocoa powder and chocolate with a schematic diagram with short description. 6
8. a) Enumerate the raw materials for the production of hard candy? Describe the functions of pre and final cooker in lollipop manufacturing? 5  
b) What do you mean by breakfast cereals? Illustrate the manufacturing process of corn flakes? 5
9. a) Point out the factors determining the characteristics of chocolate. Explain the defects of chocolate? 5  
b) What do you mean by conching and tempering in chocolate manufacturing? Shortly describe the manufacturing process of pasta. 5
10. Write short note ( any four): i) Properties of invert sugar, 2.5x4=10  
ii) HACCP,  
iii) Imitation chocolate and cocoa butter,  
iv) Protein content for different baking product,  
v) Sugar substitute and icing sugar.

**Chittagong Veterinary and Animal Sciences University**  
**Faculty of Food Science and Technology**  
**BFST 2nd year 2nd Semester Final Examination, 2016**  
**Subject: Food Microbiology (Theory)**  
**Course Code: FMB-202**

**Full Marks: 70**

**Time: 3 hours**

(Figures in the right margin indicate full marks. Answer any **five (5)** questions from each section  
Use separate answer script for each section. Split answer is discouraged.)

**SECTION-A**

1. a) List five genera from fungi, yeast and bacteria that are important in food microbiology. 4  
b) What criteria do you consider to judge a food fit for consumption? 3
2. a) Mention the segmental step of canning. 4  
b) How do you preserve food using drying method? 3
3. a) Draw and label internal structure of an egg. 2  
b) Discuss the different spoilage of egg. 5
4. a) What is single cell protein? 2  
b) Enlist the different microbial enzyme with source and its application in a tabula form. 5
5. a) Classify food borne disease. 2  
b) List some bacterial food borne diseases with causal agent, incubation period, duration and sign with foods involved. 5
6. a) What do you mean by fermentation? Mention some important fermented products in food industry. 2  
b) Describe the process beer production in brewing industry. 5

**SECTION-B**

7. a) What are indicator bacteria and why are they so called? 1  
b) Define food borne disease outbreak. 1  
c) What are the objectives of investigation of food borne disease outbreak? 2  
d) How can you proceed to investigate a food borne disease outbreak? 3
8. a) Define food additives and food preservatives. 3  
b) Mention some chemical preservative concentration and its application in food industry in a tabular form. 4
9. a) What are the compositional factors of food which have influence on microbial activity? Discuss any four of them. 7
10. a) Mention the objectives of milk pasteurization. 3  
b) Discuss the spoilage of milk. 4
11. Explain contamination, preservation, and spoilage of meat. 7
12. Explain contamination, preservation and spoilage of fish 7