

**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, 2011**  
**Subject: Baking and Confectionery Technology (Theory)**  
**Course Code: BCT-202**

**Full Marks: 70**

**Time: 3 Hours**

Figure in the right margin indicate full marks.  
 (Answer **FOUR** 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. | Write short note on: i) Leavening agent and ii) Baking powder                  | 2.5×2=5 |
| 2. | a) Define baking. Write down the steps of baking.                              | 4       |
|    | b) Classify bakery products with examples.                                     | 3       |
|    | c) How does gluten works in dough?   | 3       |
| 3. | a) Describe the modern flour milling process with diagrammatic representation. | 5       |
|    | b) Define by products. What is 'Semolina' middling and pollard?                | 2.5     |
|    | c) Enumerate the name of tests for baking quality of wheat flour.              | 2.5     |
| 4. | a) Write the formula of malted and sweet bread.                                | 3       |
|    | b) List machineries and equipments required for bread manufacturing.           | 2       |
|    | c) Describe the manufacturing process of bread.                                | 5       |
| 5. | a) Describe the following equipments-  | 5       |
|    | i) Dough mixer   |         |
|    | ii) Moulding machine.  |         |
|    | b) What is ropiness of bread? How can we prevent the moldiness of bread?       | 4       |
|    | c) Which chemical preservative are used in bread?                              | 1       |

**Section: B**

- |     |   |         |
|-----|---|---------|
| 6.  | Write short note on: i) Breakfast cereals and ii) Composite flour.        | 2.5×2=5 |
| 7.  | a) Give a formula of salted biscuit.                                      | 2       |
|     | b) Give a flow chart for the manufacturing process of corn flakes.        | 4       |
|     | c) Classify wheat flour. How does carbon-dioxide produced in bakery.      | 4       |
| 8.  | a) Give a flow chart for the manufacturing process of biscuit.            | 3       |
|     | b) Define 'hazard', HACCP and GMP.  | 3       |
|     | c) Describe the possible hazards and its control for bread.               | 4       |
| 9.  | a) What is candy product? Classify candy products with examples.          | 4       |
|     | b) Define invert sugar. Why invert sugar is better than other sugar?      | 3       |
|     | c) Write short note on: i) Maple sugar, ii) Molasses and iii) Corn syrup. | 3       |
| 10. | a) Why sugar substitutes are used in food industry.                       | 2       |
|     | b) Describe the manufacturing process of cocoa powder and chocolate.      | 6       |
|     | c) Write down the composition of chocolate liquor.                        | 2       |

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, 2011

Subject: Cereal and Legume Technology (Theory)

Course Code: CLT-202

Full Marks: 70

Time: 3 Hours

Figure in the right margin indicate full marks.

(Answer FOUR 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. a) Describe the anatomical structure of rice kernel and give the diagram of rice kernel. 3  
b) Enumerate the pattern of distribution of nutrients in the rice kernel. 2
2. a) What is parboiling? 2  
b) Enumerate the various properties of parboiled rice. 4  
c) Briefly describe the quality characteristic of rice. 4
3. a) Classify different types of wheat flour. 2  
b) Write down the composition of wheat. 2  
c) Briefly describe the tests for degree of milling refinement and tests for flour quality of wheat. 6
4. a) What is tempering? 2  
b) Indicate the names of various tests employed for cooking and processing quality of rice. 3  
c) Describe the causes and mechanism of cracking of rice during process. Enumerate the preventive measures. 5
5. a) Write down the major variables that causes various changes and deteriorations in food during storage. 2  
b) What are the chemical changes occurring in food grains during storage? 3  
c) Define respiration. Briefly describe the modern storage systems of the grain. 5

**Section: B**

6. a) Give the longitudinal sketch and cross-sections of a wheat kernel with proper level. 5
7. a) What is degree of milling of rice? 2  
b) Describe the necessity of enrichment of raw white rice. 3  
c) Name the various equipments involved in modern rice milling system and describe in brief the modern rice milling procedures. 5
8. a) Define breakfast cereals. 1  
b) Describe the milling of 'Barley'. 4  
c) Describe the manufacturing process of 'Lager beer' from barley. 5
9. a) What is GT? 2  
b) Name the methods of rice enrichment and describe about coating method. 3  
c) Indicate the utilization of various by products of rice milling. 5
10. a) Briefly describe the toxins of pulses. 4  
b) Why soymilk is considered a healthy alternative to cow's milk? 2  
c) Describe the manufacturing process of soymilk. 4

**Chittagong Veterinary and Animal Sciences University**  
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**BFST 2<sup>nd</sup> Year 2<sup>nd</sup> Semester Final Examination, 2011**  
**Subject: Food Chemistry (Theory)**  
**Course Code: FCM-202**

**Full Marks: 70**

**Time: 3 Hours**

Figure in the right margin indicate full marks.

(Answer **FOUR** 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. a) Define Gel and Emulsion. 3  
b) Draw the structure of fructose. 2
2. a) Describe briefly water treatment plant with flow diagram for boiler feed water and potable water. 7  
b) Describe with example of coagulation agent and flocculating agent. 3
3. a) Write a short essay on classification of carbohydrates. 4  
b) How can you prepare sample of monosaccharide and oligosaccharides for chemical analysis? 4  
c) What are the reasons for determining the type and concentration of carbohydrates in foods? 2
4. a) What is Maillard reaction? Briefly describe the chemistry of Maillard reaction? 5  
b) What do you understand by protein? 1  
c) What types of changes of protein occurs during processing? 4
5. a) Briefly describe the dye binding methods of protein analysis. 6  
b) Give some names of determination methods of protein. 2  
c) What are the functions of protein? 2

**Section: B**

6. a) Briefly describe the role of fats in human health. 2  
b) What are the trace elements? Why they are important for human health? 3
7. a) Discuss the effect of heat treatment on vitamins. 6  
b) Write down the functions, sources and effects of deficiency of vitamin C. Discuss its losses during food processing. 4
8. a) Describe the important steps in refining of fats and oils. 7  
b) Briefly discuss the chemical properties for identification of natural fats and oils. 3
9. a) What are the major minerals? Briefly discuss their function and sources. Write down the deficiency disorders on human health. 7  
b) Write down the physical and chemical properties of thiamin. 3
10. a) How can you purify a solid organic compound by crystallization process? 6  
b) Draw and discuss the operation procedure of Soxhlet extractor. 4

**Chittagong Veterinary and Animal Sciences University**  
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**FST 2<sup>nd</sup> Year 2<sup>nd</sup> Semester Final Examination, 2011**  
**Subject: Food Microbiology (Theory)**  
**Course Code: FMB-201 (T)**

**Full Marks: 70**

**Time: 3 Hours**

Figure in the right margin indicate full marks.

(Answer Three questions from each section of which question no. 1 and 5 are compulsory.  
Use separate answer script for each section. Split answer is not allowed)

**Section: A**

1. a) Define Food microbiology. 2  
b) Define and classify food borne diseases. 5  
c) Name eight groups of bacteria with examples that are important in food microbiology. 4
2. a) What do you mean by food intoxication and food infection? Give examples. 3  
b) What are the intrinsic and extrinsic factors of food? Describe the above said two groups of factors which influence microbial activity. 5  
c) Briefly explain symbiotic and metabiotic effects of microorganisms. 4
3. a) What are the different methods and principles of food preservation? 5  
b) Define following terms: (i) Thermal death time; (ii) D-value; (iii) Z-value; (iv) Canning. 4  
c) Write down the objectives of pasteurization of market milk. What are the different pasteurization temperatures for milk? 3
4. a) What are the major properties of an ideal antimicrobial preservative? 3  
b) Enlist different types of spoilage of milk along with a brief explanation of flavor and color changes during spoilage of milk. 5  
c) Write down different types of spoilage of meat under aerobic condition. 4

**Section : B**

5. a) What are the conditions necessary for an outbreak of botulism? 3  
b) Define food borne disease outbreak. Classify food borne outbreak on the basis of incubation period. 3  
c) Enumerate sequential steps involved in food borne outbreak investigation. 5
6. a) Enlist the WHO recommended bacteriological standard of water. 3  
b) Define GMP and HACCP. 2  
c) Write down the seven principles of HACCP that are involved in developing and operating HACCP program. 4  
d) Enlist the food enforcement and control agencies. 3
7. Discuss the history and scope of food microbiology. What do you mean by food safety? 12
8. Write short note on any four of the followings: 4×3=12
  - a) Codex Alimentarius Commission (CAC);
  - b) O-R potential;
  - c) Defects of Can;
  - d) Food fermentation by microorganisms;
  - e) Single cell protein (SCP).

**Chittagong Veterinary and Animal Sciences University**  
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**BFST 2<sup>nd</sup> Year 2<sup>nd</sup> Semester Final Examination, 2011**  
**Subject: Food Plants Design Layout and Management (Theory)**  
**Course Code: PDL-202**

**Full Marks: 70**

**Time: 3 Hours**

Figure in the right margin indicate full marks.

(Answer **FOUR** 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. | a) Give layout of a food plant.  | 3        |
|    | b) Differentiate between Good manufacturing practices and Good house keeping.  | 2        |
| 2. | a) Write down the criteria of an ideal food plant layout?  | 5        |
|    | b) What are the different types of floors? Describe about Metal plate floors and resin bed floor system (with sketch). | 5        |
| 3. | a) Give a brief outline of colour coding.  | 3        |
|    | b) Write down the rules of personal Health and Cleanliness of factory employees.                                       | 3        |
|    | c) What are the principles of hygienic design of food plants?  | 4        |
| 4. | a) Describe about screw conveyor and develop equations for calculation of capacity and horse power.                    | 4        |
|    | b) Enumerate break point curve in chlorinations.   | 3        |
|    | c) Explain Trickling filters.  | 3        |
| 5. | Write short notes on any four of the following:  | 4×2.5=10 |
|    | i) Organization  |          |
|    | ii) Long term plan   |          |
|    | iii) Floor Drain of food plant   |          |
|    | iv) BOD  |          |
|    | v) Pressure Sand filters.  |          |

**Section: B**

- |    |  |   |
|----|--|---|
| 6. | a) Define plant design and effective planning.                         | 3 |
|    | b) What are the criteria considered about material handling?           | 2 |
| 7. | a) Write down the criteria for proper site selection for a food plant. | 3 |
|    | b) Classify the detergents used for cleaning plant and equipment.      | 3 |
|    | c) Describe about labour welfare.                                      | 4 |

8. a) Classify food wastes? Describe coagulation and flocculation method for water treatment. 4
- b) Explain with the help of net sketch the function of the conventional floating dome an aerobic digester. 4
- c) What are Japanese 5 'S'? 2
9. a) Show a simple organization chart of a typical manufacturing company. 3
- b) What is production planning and scheduling? 2
- c) The fixed cost per year is Tk 20,000 and variable cost to produce 1.16 ton per day is Tk. 1500. For 100% capacity, if the plant runs for 220 day/year, calculate the total production cost per ton for 50%, 75% and 100% capacity utilization rates and give your comments. 5
10. a) Define profit volume ratio, break even point and profit. 3
- b) A processor has 6 positions to fill and has 6 people available for these jobs. 7  
The six men are given an opportunity to work at each job and from this he obtain information in terms of minutes of labour required to accomplish each jobs each men. He summarizes this information in the form of an effectiveness matrix as shown below.

		→ Men					
		A	B	C	D	E	F
Task	1	21	27	25	30	29	36
	2	19	30	20	27	25	32
	3	14	20	15	25	22	20
	4	35	32	30	35	28	40
	5	11	15	22	26	20	17
	6	28	38	36	27	30	42

Find out the least possible time to perform the jobs.

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**FST 2<sup>nd</sup> Year 2<sup>nd</sup> Semester Final Examination 2011**  
**Subject: Technology of ~~Food~~<sup>Meat</sup> Products**  
**Course Code: MTC-202**

**Full Marks: 70**

**Time: 3 Hours**

(Figure in the right margin indicates full marks. Answer Three questions from each section where question no. 1 and 5 are compulsory. Use separate answer script for each section. Split answer is not allowed)

**Section: A**

1. a) Mention present animal population, meat production and deficiency of meat in Bangladesh. 3  
b) What are the major constraints for the development of meat industry in Bangladesh? 3  
c) Write down the prospectus and potentials of meat industry in Bangladesh. 5
2. a) Describe in brief the PSE and DFD meat. 3  
b) Briefly describe the different types of animal fat, their merits and demerits for human consumption. 4  
c) State briefly about the muscle pH and its impact on meat quality and preservation. 5
3. a) What do you mean by self life of meat? Shortly describe different factors that affect the shelf life of meat. 4  
b) Briefly discuss the post-mortem changes in muscle. 4  
c) State the post mortem acidification and rigor development of slaughtered animals. 4
4. Discuss the utilization of slaughter house by products. 12

**Section: B**

5. a) Briefly Describe the beneficial aspect of nitrate in meat processing. 3  
b) Describe chemical and toxicological aspects of curing. 3  
c) What do you mean by salting and curing of meat and meat products? Mention the name of some curing agent in meat industry. 5
6. a) State the categories of processed meat products. 3  
b) Differentiate physically between cattle and buffalo meat. 4  
c) Define additives, meat extenders and fillers in meat processing. Write down the name of different non-meat ingredients of different categories. 5
7. a) What do you mean by meat processing? Write down the name of some important equipment required for meat processing with their specific purposes. 3  
b) Write down the different grades of beef with its characteristics. 4  
c) Shortly describe about the canning of meat and meat products. 5

P.T.O

8. a) Illustrate the chemical aspects of salting. 3
- b) Write down the contribution of meat to the diet. 4
- c) Describe histological structure of muscle tissue showing different parts. 5



**Chittagong Veterinary and Animal Sciences University**  
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**FST 2<sup>nd</sup> Year 2<sup>nd</sup> Semester Final Examination, 2011**  
**Subject: Nutritional Evaluation of Food Processing (Theory)**  
**Course Code: NFP-202 (T)**

**Full Marks: 70**

**Time: 3 Hours**

Figure in the right margin indicate full marks.

(Answer **Five** questions from each section of which question no. **1 & 7** is compulsory. Use separate answer script for each section. Split answer is not allowed)

**Section: A**

- |    |    |  |     |
|----|----|--|-----|
| 1. | a) | What is food processing? Describe the different types of food processing method with examples.                 | 4   |
|    | b) | “A number of nutrients are lost during preparation of food at home” how does it happen?                        | 3   |
| 2. | a) | Describe the post harvest losses of cereal grains at various stages of processing.                             | 3.5 |
|    | b) | What measures could be adopted for these post harvest losses of cereal grains in various stages of processing? | 3.5 |
| 3. |    | Write down in details about the effect of storage on nutritional value of food.                                | 7   |
| 4. | a) | What are the vitamins & minerals are most retained in canned food?   | 3.5 |
|    | b) | Do you think canned food is safe? Discuss it on the food safety point of view.                                 | 3.5 |
| 5. | a) | What do you mean by high pressure processing of food?  | 2   |
|    | b) | Explain the effect of high pressure processing on the nutritional composition of food.                         | 5   |
| 6. | a) | What are the major objectives of packaging?  | 2   |
|    | b) | Describe in brief about the adverse health effects of packaging materials.                                     | 3   |
|    | c) | What is your opinion to prevent these adverse health effects of packaging materials?                           | 2   |

**Section: B**

- |     |    |   |       |
|-----|----|---|-------|
| 7.  |    | Describe elaborately about the desirable and undesirable changes during processing of food.   | 7     |
| 8.  | a) | What are the factors affecting the kinds & rates of chemical reaction that occur in food?   | 3.5   |
|     | b) | Write down the advantages and disadvantages of dry cooking method.  | 3.5   |
| 9.  |    | Compare the nutritional composition of fresh, frozen and canned fruits & vegetables.  | 7     |
| 10. |    | Briefly describe about the effect of processing of legumes on their nutrient composition as well as quantity and quality.                                 | 7     |
| 11. | a) | How pre harvest and post harvest factors (Climatic condition, Cultural practices & Maturity) affect the nutritional composition of fruits and vegetables? | 5     |
|     | b) | Write down the name of some procedures that are currently used to slow down the deterioration rate of harvested crops.                                    | 2     |
| 12. |    | Write down short note on following topics (Any two)   | 3.5×2 |
|     | a) | Fermentation  |       |
|     | b) | Effect of heat processing on the nutrient composition of milk   |       |
|     | c) | The impact of climate change on the quality of fruits & vegetables  |       |