

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd Year 2nd Semester Final Examination 2017
Course Title: Food Trade and Laws (Theory)
Course Code: FTL-302

Full Marks: 35

Time: 2 hours

(Figures in the right margin indicate full marks. Answer any four (4) questions from each section of which question number 1 and 6 are compulsory. Use separate answer script for each section. Split answer is strongly discouraged.)

SECTION-A

1. Illustrate the functions of Bangladesh Standards and Testing Institution (BSTI) in food industry. 3
2. What do you mean by trade? Is trade a threat or an opportunity for food security? Explain your answer. 1+4
3. Interpret the principles of World Trade Organization Trading System. 5
4. What do you know about quality Management System (QMS)? Briefly describe the basic principles of QMS. 1+4
5. Briefly discuss the basic reasons, merits and demerits of international trade. 5

SECTION-B

6. Enlist the issues and constraints for Bangladesh in case of food safety. 2
7. a. Define food law? List some important food laws and regulation in Bangladesh. 1+1.5
b. According to US Food, Drug and Cosmetic Act. when food is illegal? 2.5
8. Explain the relationship between eco-labeling and trade. 5
9. What do you mean by globalization? Summarize the barriers to International Trade. 1+4
10. Write short notes on 2.5x2
 - i) Bangladesh Food Safety Authority (BFSA)
 - ii) Micheal Porter's Model

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 2nd Semester Final Examination, 2017
Subject: Applied Dietetics
Course Code: APD-302

Full Marks: 35

Time: 2 hours

(Figures in the right margin indicate full marks. Answer two (2) questions from each section where Question 1 (one) and 4 (four) are compulsory. Use separate answer script for each section. Split answer is discouraged.)

Section-A

- | | | |
|---------------|---|-----------|
| 1.a) | What do you mean by <u>Basal Metabolic Rate (BMR)</u> ? Briefly describe the factors contributing to individual variation in BMR. | 1+2=3 |
| b) | Define the terms hunger, appetite, satiation and satiety according to the feeding cycle? | 4 |
| 2.a) | Introduce <u>nutrition</u> and dietetics. "Nutrition and dietetics are the building blocks of national development"- Explain. | 2+3=5 |
| b) | What do you understand by menu planning? Write down different steps of menu planning. | 1+4=5 |
| 3.a) | What is therapeutic diet? How do you modify a normal diet into therapeutic diet? | 1.5+1.5=3 |
| b) | Define diet therapy? "The basis for planning a therapeutic diet is a normal diet"- comment your opinion. | 1+2=3 |
| c) | Differentiate between enteral parenteral nutrition. | 4 |

Section-B

- | | | |
|-----------------|--|---------|
| 4.a) | What are the causes of liver diseases? | 3 |
| b) | Explain symptoms and dietary management for infectious Hepatitis. | 5 |
| 5.a) | Define the following terms
i) Impaired glucose tolerance
ii) Diabetes Insipidus | 2.5x2=5 |
| b) | Discuss the general guidelines for dietary management of individuals with diabetes mellitus. | 5 |
| 6.a) | What are the factors that contribute to obesity? | 3 |
| b) | What are the dietary modifications needs in the treatment of obesity? | 4 |
| c) | Explain the parameters used in the diagnosis of obesity. | 3 |

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd Year 2nd Semester Final Examination 2017
Course Title: Statistics (Theory)
Course Code: STC-302

Full Marks: 70

Time: 3 hours

(Figures in the right margin indicate full marks. Answer any three (3) questions from each section of which question number 1 and 5 are compulsory. Use separate answer script for each section. Split answer is strongly discouraged.)

SECTION-A

1. a) Define Variable. Explain different types of variable with an example each. 4
 b) Suppose you are given a data set on size of fruits- small, medium and large. To present the above data which graphs would you use? 2
 c) Name five graphs used to present continuous data. 5

2. a) What are the measures of central tendency? Which is the best measure and why? 3
 b) The following data refer to the numbers of eggs that 10 families consume per week- 13, 12, 9, 17, 10, 15, 11, 15, 18, 16. Calculate any two measures of central tendency and comment. 1.5x2=3
 c) From the data given in 2 (b) find Q_1 , D_5 and P_{35} with comments. 6

3. Distinguish between the following terms with examples. 6x2=12
 i) Variable and attribute;
 ii) Discrete and continuous Variables;
 iii) Tabulation and classification;
 iv) Population and Sample;
 v) Nominal and ordinal scales of measurement;
 vi) Ratio and Interval scales of measurement.

4. a) Discuss treatment, block, experimental unit and yield from an example of your field. 4
 b) Two groups of 10 fishes were given two different feed (A and B). From the first group 3 fishes were culled. At the end of the experiment the sample means and variances were calculated-

Particulars	Feed A	Feed B
Mean	2.5	1.9
Variance	0.02	0.05

Is Feed A can cause fishes to gain more weight? Test at 5% level of significance. (use any value from $z_{0.025} = 1.96$, $t_{0.025,17} = 2.11$, $t_{0.05,17} = 1.74$, $t_{0.05,20} = 1.725$)

- c) If, in the above problem, another feed (Feed C) is added to test the difference among three feeds in weight gain which test will be used? Also set the hypothesis in this case.

SECTION-B

5. a) "CV is the best measure of Dispersion" – Comment 2
 b) What will be the shape of the distribution of cakes- 3
 i) Mean= 2kg, Median=. 1.5 kg, Mode= 1 kg
 ii) Mean =1.5 kg, Median = 2kg, Mode= 3 kg

- c) Monthly food expenditure for families of two in Chittagong is on average BDT 7000 and has a SD of BDT 500. Assume that the monthly food expenditure is normally distributed. 6
 i) What is the probability that monthly food expenditure is less than 6500 BDT?
 ii) What is the probability that monthly food expenditure is between 6300 to 7300 BDT?
 iii) What is the probability that monthly food expenditure is less than 6000 BDT?

6. a) Mention one discrete and one continuous distribution with some properties each. 4
 b) Find the intensity or degree of the relationship between age and weight of chickens and comment. 4

Age (day)	8	10	12	14	16	18
Weight (kg)	0.45	0.62	0.9	1.1	1.2	1.6

- c) How can you fit a regression equation of weight on age of chickens using the above data? 4

7. a) Define null hypothesis, alternative hypothesis, simple hypothesis with example. 3
- b) Explain the concept of critical value, critical region and acceptance region. 3
- c) Explain with example how will you determine whether a test is one tailed or two tailed. 3
- d) Explain the concept of type-I and type-II errors. Which one of the error we fixed up in advance and why? 3

8. a) Name the measures of Dispersion. 4
- b) Manager of a departmental store gave data to the number of sold eggs in 15 days from his store. The data of 15 days are: 8

130 112 100 65 122 121 95
 (87) 95 120 125 80 146 11 90

Calculate any four measures of dispersion and comment.

$$M.D (\bar{x}) = \frac{\sum (x - \bar{x})}{n}$$

Chittagong Veterinary and Animal Sciences University
 Faculty of Food Science and Technology
 BFST 3rd Year 2nd Semester Final Examination 2017
 Course Title: Fermentation and Beverage Technology (Theory)
 Course Code: FBT-302

Full Marks: 70

Time: 3 hours

(Figures in the right margin indicate full marks. Answer any four (4) questions from each section of which question number 1 and 6 are compulsory. Use separate answer script for each section. Split answer is strongly discouraged.)

SECTION-A

1. a) Give the definition of fermentation. 02
 b) Name the main factors those control the fermentation. 01
 c) Draw a figure showing the phases in the growth of fermentation. 02
2. a) Mention the various types of microbial changes in food during fermentation. 02
 b) Briefly discuss on the production of fermented swiss cheese. 04
 c) Give the steps for the production of yogurt with safety and quality. 04
3. a) Define beer. Give an overview of malting and brewing. 02+02
 b) Discuss about the ingredients of beer. 04
 c) Sketch the diagram showing the changes occurring during brewing fermentation. 02
4. a) Name the ingredients of a soft drink. Mention the role of CO₂ in soft drinks. 2.5
 b) Give the sequence of soft drink production up to bottling in a plant layout. 2.5
 c) Discuss the production of a safe carbonated non-alcoholic beverage with the role of its ingredient. 05
5. Write short note on any four of the following: 2.5*4=10
 a) Wine, b) Whisky, c) Vodka, d) Rum, e) Scotch, f) Gin

SECTION-B

6. a) Define and classify beverage. 01+02
 b) What do you mean by microbial containment? 02
7. a) Define LAB. 04
 b) Briefly describe about fermentation process with schematic diagram. 04
 c) Enlist four types of non-beverage fermented plant products with raw materials and fermenting organisms. 02
8. a) Define primary and secondary metabolites with examples. 04
 b) How can you isolate and identify LAB from yogurt? 04
 c) Give some examples of enzymes produced by fermentation process with involved organisms. 02
9. a) Discuss about the CIP and SIP of a fermenter. 02+02
 b) Brewer's yeast is grown continuously in a fermenter with an operating volume of 12m³. The residence time is 24 hrs and the yeast has a doubling time 3.2 hrs. A 2% inoculum, which contains 5% yeast cells, is mixed with the substrate. Calculate the mass of yeast harvested from the fermenter per hour. (Assume that the density of the broth is 1010kg/m³) 3.0
 c) Differentiate between fermenter and bioreactor. 02
10. a) Discuss about the batch culture of fermentation process with mathematical expression. 04
 b) Define industrial alcohol. Sketch the flow sheet of alcohol manufacturing with tubular tower fermenter. 01+03
 c) State the methods of carbonation. 02

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Chittagong Veterinary and Animal Sciences University
 Faculty of Food Science and Technology
 BFST 3rd year 2nd Semester Final Examination, 2017
 Course Title: Technology of Sugar and Sugar Products (Theory)
 Course Code: STH-302 (T)

Full Marks: 70

Time: 3 hours

[Figures in the right margin indicate Full Marks. Answer any four questions from each section where **question no. 1 & 6 are compulsory**. Use separate answer scripts for each section. **Split answer is strongly discouraged.**]

SECTION-A

1. a) What is Sugar? 01
 b) Discuss the importance of sugar in human body. 04

2. a) Write down the composition of quality cane. 02
 b) Discuss about the maturity of sugarcane. Is it possible to produce matured cane earlier than usual? If so, then discuss with your opinion. 01+01+02
 c) What problems will arise, if raw juice is not treated? Also, write the composition for this type. 02+02

3. a) Discuss in details about the defecation process in sugar manufacturing industries. 06
 b) Write down the role of temperature and p^H in juice clarification. 02+02

4. a) Discuss the principle of vacuum evaporation. 04
 b) Where should you use single effect evaporation? 02
 c) Discuss briefly about the sugar functional properties. 04

5. a) Discuss the role of distillation and dilution for ethanol production from molasses. 02+02
 b) What do you mean by caring and refining operations? 02+02
 c) Write the reactions involved to produce ethanol from molasses. 02

SECTION-B

6. a) Discuss about sensible heat and latent heat of evaporation. 1.5+1.5
 b) Write the differences between white and brown sugar. 02

7. a) Why super saturation is required for crystallization? 02
 b) How crystals are separated from solutions? 02
 c) Discuss about the unit operations involved in sugar manufacturing. 06

8. a) Define EIA. Write down the EIA methodologies to conduct environmental assessment. 01+04
 b) Discuss about the steps for conducting EIA. 03
 c) Write down the permissible level of noise/sound suggested by DoE. 02

9. a) Discuss environmental pollution due to sugar industries in Bangladesh. And how, these pollutions can be minimized. 06
 b) Write down the waste water quality parameters and their permissible level in Bangladesh. 02+02

10. a) How can you manage ash generated from sugar industries? 02
 b) Why lime is used in clarification process? 03
 c) Discuss about the principle of vacuum filter and vacuum pan in sugar industries. 2.5+2.5

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 2nd Semester Final Examination, 2017
Course Title: Food Packaging (Theory)
Course Code: FPK-302

Full Marks: 70

Time: 3 hours

[Figures in the right margin indicate Full Marks. Answer any four questions from each section where **question no. 1 & 6 are compulsory**. Use separate answer scripts for each section. **Split answer is strongly discouraged.**]

SECTION-A

1. a) What do you mean by food packaging? Write down the requirements for effective food packaging. 1.5+3.5
2. a) What are the functions of food packaging? Explain. 04
 b) Describe the following terms: 03X2=06
 i) Packaging Environment
 ii) Food spoilage bacteria
3. a) What types of properties are considered during choosing packaging materials? Describe. 05
 b) Starting with raw materials describe the production process of glass containers by 'blow and blow' and 'press and blow' process. 2.5+2.5
4. a) Classify paper as packaging materials. 02
 b) What are the advantages of plastic as packaging materials? 02
 c) Write down the packaging process of the following food: 03X2=06
 i) Fresh meat
 ii) Respiring fruits and vegetables
 iii) Pasteurized products
5. a) Write down the different types of food hazards during distribution and storage of food items. 03
 b) What are the techniques to be followed to control micro-organisms? 03
 c) What are the functions and requirements of food containers? 04

SECTION-B

6. a) Write a short note on 'Thermoforming process'. 05
7. a) Write down the raw materials of pulp making for the production of paper. 03
 b) What are the reasons of using fillers, sizing agents and coloring agents during paper making? 03
 c) Discuss properties of the following materials as flexible packaging films 02+02
 i) Polyethene
 ii) Polypropylene
8. a) What is MAP? 02
 b) What do you mean by active packaging? Describe the systems of active packaging with examples. 01+03
 c) Describe the production process of double reduced tin plate. 04
9. a) What are the different forms of packaging materials? 02
 b) What are the advantages and disadvantages of glass as packaging materials? 02+02
 c) Evaluate 'Plastic' as a packaging materials. 04
10. a) What is product labeling? With a neat sketch show the different types of information of a labeling. 05
 b) What is aluminum foil? What are the advantages of using aluminum foil? 01+04

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 2nd Semester Final Examination 2017
Subject: Tea, Coffee, Cocoa and Spices Technology (Theory)
Course Code: TCS-302 (T)

Full Marks: 35

Time: 2 hours

(Figures in the right margin indicate full marks. Answer any four (4) questions from each section of which question number 1 and 6 are compulsory. Use separate answer script for each section. Split answer is strongly discouraged.)

Section-A

1. a) What do you mean by tea agro techniques? - Briefly describe. 3
2. a) What do you mean by conching? Describe tempering sequence during lipid crystallization in chocolates. 1+1=2
b) Describe chocolate manufacturing process. 3
3. a) How chocolate flavour formation and development process occurs? 2
b) Describe the essential features of oxidation via a free radical-mediated chain reaction. How polyphenol is effective against disease formation in human body. 1.5+1.5=3
4. a) Differentiate black tea and green tea based on manufacturing process, nutritive values and quality. 2
b) Briefly describe CTC manufacturing process of black tea. 3
5. a) Describe main physiological actions of coffee components. 2
b) How coffee berries are harvested? Illustrate flow chart of dry, semi-dry and wet processing of coffee. 1+2=3

Section-B

6. a) Explain process and material flow chart for production of instant tea. 2
7. a) What is decaffeination? Describe different methods of decaffeination of coffee. 1+2=3
b) What is tea quality and tea tasting? 2
8. a) What do you mean by pruning? Describe the working principles of shredder rotor vane in rolling of tea. 0.5+2=2.5
b) How tea grading and sorting is done? Outline the grading of Bangladeshi tea. 1+1.5=2.5
9. a) Briefly describe the biological changes during withering. 2
b) How theaflavin and thearubigin formation occurs in tea? Describe their roles in constructing tea colour, flavor and texture. 2+1=3
10. a) What kind of quality should be maintained as emergence for spices? 2
b) Differentiate herbs and spices. Explain the roles of active plant constituents in herbs and spices. 3

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd Year 2nd Semester Final Examination 2017
Course Title: Food Safety and Hygiene (Theory)
Course Code: FSH-302

Full Marks: 70

Time: 3 hours

(Figures in the right margin indicate full marks. Answer any four (4) questions from each section of which question number 1 and 6 are compulsory. Use separate answer script for each section. Split answer is strongly discouraged.)

SECTION-A

- | | | |
|----|---|---------|
| 1. | a) What are high-risk foods? | 02 |
| | b) Explain in brief the following statement, " Risk is the combination of the likelihood (i.e. probability) and consequences of a specified hazardous event occurring." | 03 |
| 2. | a) Discuss about different food preservation techniques. | 05 |
| | b) How many ways a hazardous chemical can cause harm? | 02 |
| | c) Write down general chemical safety guideline. | 03 |
| 3. | a) What do you mean by the term "Work Place"? Enumerate duties of employer and employees to ensure a safe work place. | 01+04 |
| | b) Write down the documents those can assist staffs to identify hazards. | 2.5 |
| | c) Describe the duties and scope of work of health and safety executive. | 2.5 |
| 4. | a) What are the causes of food poisoning? Write down the symptoms of food poisoning. | 1.5+1.5 |
| | b) Briefly discuss about the precautions need to be taken during preparing and storing of food to avoid food poisoning. | 03+03 |
| | c) What is food safety controls? | 01 |
| 5. | a) Define Hazard. Discuss about the hazards those can be found within a working environment. | 01+03 |
| | b) What is risk assessment? Why is it important? | 02+02 |
| | c) How do you do a risk assessment? | 02 |

SECTION-B

- | | | |
|-----|--|----------|
| 6. | a) Define the following terms:
Safety, Risk, Safety Factor | 03 |
| | b) Write down common food pests and evidence of food infestation. | 01+01 |
| 7. | a) Why washing hand is so important regarding food safety? Write down conditions after which washing hands should be carried out. | 01+03 |
| | b) Describe hazards associated with food pests. | 02 |
| | c) Enumerate different pest control techniques. | 04 |
| 8. | a) Define the following terms:
Control Measure, Critical Control Point, Critical Limit, Corrective action | 04 |
| | b) Write down the difference between Critical Control Point (CCP) and Control Point (CP). | 03 |
| | c) What is HACCP? Write down seven principles of HACCP. | 01+02 |
| 9. | a) Write down the importance of good food hygiene. | 02 |
| | b) What is documented food safety management system? Why should we have it? | 02+02 |
| | c) Why is it important to have "Review and Monitor" process in risk assessment? | 02 |
| | d) Define different risk level. | 02 |
| 10. | a) Write a short note on the following:
i) RIDDOR
ii) Fire Risk Assessment
iii) Basic Risk Management System
iv) Factors of Bacterial Growth | 2.5*4=10 |

Chittagong Veterinary and Animal Sciences University

Faculty of Food Science and Technology

BFST 3rd year 2nd Semester Final Examination 2017

Course Title: Dairy Products Technology (Theory)

Course Code: DPT-302

Full Marks: 70

Time: 3 hours

(Figures in the right margin indicate full marks. Answer any **THREE** questions from each section of which question number 1 and 5 are compulsory. Split answer is strongly discouraged.)

Section-A

1. a) Define Cream. Write down the classification of Cream. 3
b) What is the principle of Cream separation? 3
c) Describe the Cream separation method which is applied commercially. 5
2. a) Write down the basic principles of Cheese making? 4
b) What are the classifications of Cheese? 3
c) Describe the procedure of Cheddar Cheese manufacture. 5
3. a) What is difference between Butter and Ghee? 2
b) What are the various methods of manufacture of Butter and Ghee? Describe which are suitable for commercial Butter operations. 4
c) Briefly describe the physio-chemical properties of Ghee. 3
d) How can you proceed for assessment of methods for detection of palm oil and/or coconut oil in ghee? 3
4. Write short notes (any 4) : 3 x 4= 12
a) Functional Dairy Foods, b) Mini Dairy plant, c) State some international & national Brands of Ghee, Butter, Ice Cream and dairy Starter Cultures. d) Sensory analysis of Cheese, e) Consumption of Dairy Foods in various countries.

Section-B

5. a) What is the difference among Curd, Dahi and Yoghurt? 2
b) Briefly describe manufacturing steps of Dahi. 3
c) What are the biochemical change occur during preparation of Dahi? Briefly describe it. 4
d) Shortly describe the nutritional and therapeutic properties of functional Yoghurt. 2
6. a) What do you mean by indigenous dairy products? 2
b) Illustrate manufacturing steps of Milk Vita Rossomalai. 3
c) Briefly describe the health benefits of Rosogalla? 4
d) Give a schematic diagram for Sandesh Preparation. 3
7. a) Define powder milk with classification. 2
b) What is Melamine? 2
c) Compare the physical and sensory characteristics of drum and spray dried milk. 4
d) Briefly describe about the manufacturing of whole milk powder by spray-drying system. 4
8. a) Briefly explain types of packing material used for dairy products. 3
b) Briefly describe recommended storage times and temperatures for dairy products. 3
c) What are the nutritional compositions of sweetened Condensed milk? 3
d) Briefly describe the sweetened Condensed milk manufacturing process. 3