# Chittagong Veterinary and Animal Sciences University
## Faculty of Food Science and Technology
## BFST 3rd Year 2nd Semester Final Examination 2018
## 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 three (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 cross contamination? 2
   b) What are the risks of cross contamination? 3

2 a) What is hazard? Mention different kind of hazards those are associated with different stages of a food business. 1+4=5
   b) Briefly discuss the food handling controls. 3
   c) What kind of work wear should be worn during food preparation? 2

3. a) Define the term "Work Place"? Enumerate duties of a employer and employees to ensure a safe work place. 1+4=5
   b) List the costs those can be brought by poor safety management. 2.5
   c) Recognize the hazards those should be identified in a working environment. 2.5

4. a) What is HACCP? Why should one use HACCP in a business? 3.5
   b) Identify the benefits of using HACCP. 2.5
   c) Apply corrective actions those can be taken to minimize hazard at different stages of food business. 2
   d) Mention documents need to complete HACCP. 2

5. a) Define the term Allergy. 1
   b) List the sources and symptoms of food allergens. 3
   c) Outline the actions need to be taken during buying of food. 3
   d) Outline the precautions need to be taken during food storage to avoid food poisoning. 3

## SECTION-B

6. a) Define the following terms: 2
   Food safety, Critical Limit, Deviation, Corrective Action
   b|) Recognize the importance of personal hygiene. 3

7. a) What is an adverse health effect? 2
   b) Will exposure to hazards in the workplace always cause injury, illness or other adverse health effect? 3
   c) Define different risks labels. 3
   d) What documentation should be done for risk assessment? 2

8. a) Mention the principles of cleaning. 2
   b) Differentiate the functions among disinfectant, detergent and sanitizer. 2
   c) Illustrate core temperature, reheating and defrosting of food. 4
   d) Define "Temperature Danger Zone". 2

9. a) List seven stages of HACCP. 2
   b) Briefly discuss about the first step of HACCP. 3
   c) Summarize different steps in food safety management system. 5

10. a) Write a short note on the following: 2.5X4=10
   i) Data Coding, ii) Food Poisoning, iii) PPE, iv) First Aid Kit

**Chittagong Veterinary and Animal Sciences University**

**Faculty of Food Science and Technology**

**BFST 3rd Year 2nd Semester Final Examination 2018**

**Course Title: Technology of Sugar and Sugar Products (Theory)**

**Course Code: STH-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) Define the following terms: 3
   i) Brix, ii)Invert Sugar, iii) Massecuite
   b) Draw the chemical structure of the following: 2
   i) D-glucose, ii) Sucrose, iii) Lactose, iv) Fructose

2. a) How is sucrose formed in cane? 2
   b) Write the composition of quality cane. 2
   c) Discuss the factors influencing production of quality cane. 6

3. a) Discuss the clarification of cane juice. 6
   b) Explain the factors influencing cane juice clarification. 4

4. a) Discuss the conditions of storing sugar. 3
   b) What is corrosion? outline the corrosion problems in sugar plant. 1+2=3
   c) Why did sugar industries need to install ETP? What are the general parameters those are considered for ETP operation? 2+2=4

5. a) What is evaporation? Discuss the advantages of multiple effect evaporator compared to single effect evaporator. 2+3=5
   b) Summarize the mechanism of crystal growth formation. Also analyze the desired requirement of sugar crystallization. 3+2=5

## SECTION-B

6. a) How do losses of sucrose occur in sugar industry? 3
   b) List the by-products of sugar industries. 2

7. a) Enlist the use of white and brown sugar in food industries. 2
   b) What is azeotropic mixture? Discuss the role of distillation and dilution for ethanol production from molasses. 1+4=5
   c) How can you minimize water pollution problems in distillery? 3

8. a) Sketch a feed-backward triple effect evaporator. 3
   b) For this system, if 20% sugar juice is concentrated to 60% sugar solution and if, equal amount of evaporation is done in each effect, then calculate the composition and weight of the stream entering the second and third effect if 1000 kg of feed is fed to the first evaporator. 5
   c) Why are pumps and boilers used in sugar industries? 2

9. a) What is affination? Discuss the unit operations used in refining and finishing sections. 1+4=5
   b) With process flow diagram discuss the industrial preparation of ethanol. 5

10. a) Discuss the principle of vacuum filter and vacuum pan. 2.5+2.5=5
    b) How are bagasse utilized in juice pre-heating? 3
    c) Write down the composition of sugar cane juice. 2

# Chittagong Veterinary and Animal Sciences University
## Faculty of Food Science and Technology
## BFST 3rd Year 2nd Semester Final Examination 2018
## 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) Generalize the purpose of fermentation. 3
   b) Enlist the common micro-organisms associated with fermentation. 2

2. a) Illustrate principal steps in protein DSP. 5
   b) Briefly describe the recovery and purification process of citric acid. 5

3. a) What do you mean by ethanol fermentation? 2
   b) Give an overview of ethanol fermentation. 3
   c) What is 'Brewing'? Briefly discuss about the brewing process. 5

4. a) Analyze the water quality for soft drink or juice. 3
   b) Briefly describe the major components of fermentor. 7

5. a) Illustrate the bacterial growth curve. 3
   b) Why preservative are not used in fermented foods? 3
   c) How can you prepare seed culture for fermentation? 4

## SECTION-B

6. a) Discuss about the different types of fermentation. 5

7. a) Define carbonation. Demonstrate the methods of carbonation. 2+2=4
   b) Recognize the components of carbonated beverage. 6

8. a) Draw the diagrams of continuous culture system. 3
   b) Summarize the different cleaning and sterilization techniques of fermentor. 3
   c) Write down the short note on 2X2=4
      i) Stirred tank fermentor
      ii) Air-lift fermentor

9. a) Which culture system is best for fermentation?-Explain. 4
   b) How can you recover intracellular product in fermentation? 2
   c) Explain the method of disintegration of cells. 4

10. a) Enlist the natural and artificial permitted colors of soft drinks. 3
    b) Define inocula and development of inocula. List the criteria for transfer of inocula. 2+1=3
    c) How can you prepare bacterial inoculum for the production of vitamin $B_{12}$? 4

**Chittagong Veterinary and Animal Sciences University**
**Faculty of Food Science and Technology**
**BFST 3rd Year 2nd Semester Final Examination 2018**
**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 Statistics according to R.A. Fisher. Describe the scope of Statistics in your field. 4
   b) Identify the experimental unit and its measurement scale. i) Temperature of a food storage ii) IQ score of a student iii) Apgar score of a new born baby iv) Food quality determine by food analyst v) Proximate analysis of a food item vi) Time of a day vii) Socio-economic status of a citizen viii) Printing mistakes per page of a book. 4
   c) Difference between: i) Bar-diagram and Histogram ii) Frequency curve and Cumulative frequency curve 3

2 a) What are the characteristics of a frequency distribution? List the different measures of central location and measures of dispersion. 4
   b) Point out the characteristics of ideal measures of dispersion. Indicate the best measure of central location. 4
   c) Identify the merits and demerits of median and quartile deviation 4

3. a) Define measure of central tendency of a set of data. Mention the reason of best measure of central tendency. 4
   b) Define arithmetic mean. State its important properties and prove any two of them. 4
   c) Using the following data prove that AM> GM> HM. 4

| Daily expenditure (in Tk) | 50-60 | 60-70 | 70-80 | 80-90 | 90-100 |
|---|---|---|---|---|---|
| No. of Students | 5 | 8 | 15 | 10 | 4 |

4. a) Define skewness and kurtosis. Anthocyanin content (in gm) of pomegranate fruits is 10, 12, 15, and 20. Calculate the shape characteristics of the distribution of data for skewness. 4
   b) Explain moments with classification. Given that the first four central moments are 0, 2.5, 0.7 and 18.75. Find out the kurtosis of the data and comment. 4
   c) Give outline the all graphs names to represent qualitative and quantitative data. 4

## SECTION-B

5. a) Define probability of an event. Prove that probability of an event lies between 0 and 1. What is meant by P=1 and P=0. 3
   b|) State and prove the additive law of probability for two non-mutually exclusive events. 4
   c) Distinguish between mutually exclusive event and non-mutually exclusive event. 4

6. a) Identify the terms: Significant value, degrees of freedom, null hypothesis and test statistic 4
   b) Prepare a diagrammatic presentation for all kinds of test of significance of population mean. 4
   c) Explain the different steps of conducting a single population proportion test. 4

7. a) Define Binomial distribution and write down the important properties of this distribution. 4
   b) How Binomial distribution is related with Poisson and Normal distribution. 4
   c) State and prove Bayes theorem. Write down its importance and limitation in Statistics 4

8. **Answer the following questions:** 12
   a) What is the first stage in Statistics?
   i) Review the materials ii) Collection of data iii) Organization of data iv) Identify the

**Chittagong Veterinary and Animal Sciences University**
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**BFST 3rd year 2nd Semester Final Examination 2018**
**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 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. | | Which is better "Black Tea" or "Green Tea"? Give your justification. | 03 |
| 2. | a) | What is pruning in tea? Classify the pruning of tea plants. | 1+2=3 |
| | b) | How can you separate caffeine from tea? | 02 |
| 3. | a) | How withering effects on quality of tea? Write down the factors associated with withering. | 2+1=3 |
| | b) | Sketched out the CTC tea manufacturing. | 02 |
| 4. | a) | Is decaffeinated coffee bad for us? Justify your answer. | 02 |
| | b) | How can you differentiate between decaffeinated and regular coffee? | 03 |
| 5. | a) | Briefly describe the manufacturing process of chocolate. | 03 |
| | b) | What are the side effects of eating chocolate? | 02 |

## Section-B

| | | | |
|---|---|---|---|
| 6. | | Explain the role of fats on rheological and textural qualities of chocolate. | 02 |
| 7. | a) | What do you mean by scented teas? Draw schematic figure of a tea dryer. | 0.5+2=2.5 |
| | b) | What is withering percentage? How tea grading and sorting is done? | 0.5+2=2.5 |
| 8. | a) | Write down the botanical classification of spices? | 02 |
| | b) | What is bulk density? "Bulk density is considered as a parameter in quality standard specifications for spices"- Explain it briefly? | 1+2=3 |
| 9. | a) | Write down the beneficial effects of tea fermentation. | 02 |
| | b) | Outline the roles of bio-chemical components of tea in constructing its color, flavor and texture. | 03 |
| 10. | a) | Sketch and label the crucial portion in a typical structure of a coffee bean. | 2.5 |
| | b) | List color components and their tint of herbs and spices. | 2.5 |

group of people to be studied

b) The most frequently occurring value of a data set is called the-
   i) Mean ii) Median iii) Mode iv) Range

c) Estimate the mode of skewed distribution with a mean of 100 and a median of 80?

d) Sum of all squared deviations is divided by the total number of observations to calculate-
   i) Population deviation ii) Population variance iii) Sample deviation iv) Sample variance

e) The measures of dispersion can never be-
   i) Zero ii) Positive iii) Negative iv) Both positive and negative

f) The sum of absolute deviation is minimum if these deviations are taken from the-
   i) Mean ii) Standard deviation iii) Median iv) Mode

g) If the occurrence of one event means that another cannot happen then the events are
   i) Independent ii) Bayesian iii) Mutually exclusive iv) Conditional event

h) In special rule of multiplication of probability the events must be-
   i) Independent ii) Conditional event iii) Dependent event iv) Marginal event

i) A frequency polygon is constructed by plotting frequency at the class interval are the-
   i) Upper limit of the class ii) Lower limit of the class iii) Mid value of the class iv) Any values of the class

j) Total area under the normal curve is-
   i) Greater than 1 ii) Less than 1 iii) 0 iv)1

k) The scatter in a series of values about the average is called-
   i) Central tendency ii) Dispersion iii) Skewness iv) Symmetry

l) If Y=5x+10 and X is N(10, 25), the mean of Y is-
   i) 135 ii) 50 iii) 60 iv) 70

**Chittagong Veterinary and Animal Sciences University**
**Faculty of Food Science and Technology**
**BFST 3rd year 2nd Semester Final Examination 2018**
**Subject: 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 questions from each section where 1 and 6 are compulsory. Use separate answer script for each section. **Split answer is strongly discouraged.)**

## Section-A

1. Do you think present food laws and regulations ensure the food safety in Bangladesh? Justify yourself. 3

2. Illustrate the vision, mission along with the principles and values of Bangladesh food safety authority (BFSA). 5

3. Dramatize some advantages and disadvantages of international trade. 5

4. What do you mean by domestic and international food trade? Shows the importance of food trade in Bangladesh. 5

5. What is the purpose of trade development strategy? Explain the components of trade development strategy. 5

## Section-B

6. Define trade facilitation along with their objectives. 2

7. Enlist different activity wings of BSTI. Explain metrology structure of BSTI. 1+4

8. Write down some laws and regulations of food additives use in Bangladesh. 5

9. Briefly describe the international organization for standardization (ISO): ISO 22000 principle in food safety management. 5

10. Write short note on the following- 2.5×2=5
    a) The standard model of trade
    b) The world trade organization(WTO)

# Chittagong Veterinary and Animal Sciences University
## Faculty of Food Science and Technology
## BFST 3rd Year 2nd Semester Final Examination 2018
## 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 (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 butter. Discuss the manufacturing process of butter -briefly | 4 |
| | b) | Name the different methods for preparing butter | 2 |
| | c) | State how would you prepare ghee by cream-butter process | 3 |
| | d) | Mention the by-products of ghee | 2 |
| 2 | a) | What is ice-cream? Describe the manufacturing process of ice-cream | 4 |
| | b) | Mention the common defects of ice-cream with its remedial measures | 4 |
| | c) | Discuss the challenges and prospects of ice-cream industry in Bangladesh | 4 |
| 3. | a) | What is cheese? State the manufacturing process of Cheddar cheese | 4 |
| | b) | Classify cheese on the basis of moisture content | 4 |
| | c) | Give the nutritional composition of cheese and the changes occur during ripening of cheese | 4 |
| 4. | a) | Enlist local dairy products & by-products with their recommended storage times and temperature | 4 |
| | b) | State the process of making 'Rosogolla' at home | 4 |
| | c) | Discuss the nutritional status of 'Chamcham'-briefly | 4 |

## SECTION-B

| | | | |
|---|---|---|---|
| 5. | a) | Define powder milk with its composition | 3 |
| | b\|) | Give the schematic diagram for manufacturing whole milk powder by spray-drying system | 4 |
| | c) | Compare the physical and sensory traits of drum and spray powder milk | 4 |
| 6. | a) | What is Dahi? State the modern method for preparing sweet Dahi | 4 |
| | b) | Discuss the biochemical changes occurs during preparation of functional yogurt | 4 |
| | c) | State how will you select good quality Dahi | 4 |
| 7. | a) | Define condensed milk, and classify it | 4 |
| | b) | State the manufacturing process of sweetened condensed milk | 4 |
| | c) | State the storage methods of different dairy products | 4 |
| 8. | | **Write short note on any four of the following : 3 × 4--12.0** | 12 |
| | a) | Fat-based dairy products | |
| | b) | Coagulation process of milk | |
| | c) | Infant milk food | |
| | d) | Importance of Dairy Technology | |
| | e) | Glamorous girl of Dairy Industry | |

**Chittagong Veterinary and Animal Sciences University**
**Faculty of Food Science and Technology**
**BFST 3rd year 2nd Semester Final Examination 2018**
**Subject: Applied Dietetics (Theory)**
**Course Code: APD-302**

**Full Marks: 35** **Time: 2 hours**

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

## Section-A

1. Write down the concept of glycemic index and food exchange list. 3

2. a) Define balanced diet. What are the requirements for planning a diet? 1+3
   b) Classify therapeutic diet on the basis of function. 3

3. a) What is $HbA_{1C}$? Is it reflects the general trend of glucose level? 1+2
   b) List the types of diabetes mellitus. Write a note on the complications of DM. 2+2

4. a) What do you mean by Broka's Index? 2
   b) Give a dietary modification and exercise pattern for the person with body mass index 39.9. 5

## Section-B

5. Explain the physiological role of sucking reflex in lactation. 4

6. a) Write down the functions of kidney. 3
   b) Summarize the dietary management of glomerulonephritis. 4

7. a) What are some Sodium restricted diets? Describe it. 3
   b) What dietary management will you give for a patient suffering from hypertension with remarkable blood pressure of 190/95 mmHg. 4

8. a) Jaundice- a symptom of liver disorders. Explain it. 2
   b) Explain the symptoms and dietary management for infectious hepatics. 5

# Chittagong Veterinary and Animal Sciences University
## Faculty of Food Science and Technology
## BFST 3rd Year 2nd Semester Final Examination 2018
## 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 (4) questions** from each section of which question number **1 & 6 are compulsory**. Use separate answer script for each section. **Split answer is strongly discouraged**.)

## SECTION-A

1. Define food packaging. Write down the chronological history of plastic pakaging. 5

2. a) What are the raw materials of glass manufecturing? 2
   b) Briefly describe flow process (Blow & Blow) for the production of glass containers. 4
   c) Which are the properties considered during choosing glass as packaging materials? 4

3. a) Define the term "Containers". 1
   b) Briefly discuss about the primary, secondary and tertiary containers of food packaging. 5
   c) Write a short note on "Environmentally Friendly Packaging". 4

4. a) What are the agents of food deterioration? Describe the techniques to control micro organism. 3+2=5
   b) List the role of food packaging. 5

5. a) What do you mean by flexible packaging film? 1
   b) Evaluate plastic as flexible packaging film. 3
   c) Write down the properties of the following as flexible packaging materials: 2X3=6
      i) Polypropylene ii) Aluminmium Foil iii) Cellelose Acetate

## SECTION-B

6. Write a short note on "Blister Packaging Process". 5

7. a) Classify pulp maling technique in paper manufecturing. 2
   b) Describe deinking process of paper with a flow chart. 3
   c) Discuss the production process of double ruduced tin plate. 5

8. a) What is plastication? 2
   b) Draw a extruder with its different parts. 4
   c) Describe the manufecturing process of plastic bottle. 4

9. a) Describe the properties which should be considered during choosing a packaging material. 4
   b) Define shelf life of a food product. How to determine shelf life of packaged food produts? Describe. 4
   c) Write down the functions of product labelling. 2

10. a) Enumerate the standard methods for packaging testing. 5
    b) Write down the packaging process of the following food items: 2.5X2=5
       i) Sugar Confectionery
       ii) Beers and Soft Drinks