

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 2nd Semester Final Examination, 2015
Subject: Statistics (Theory)
Course Code: STC-302

Full Marks: 70

Time: 3 hours

(Figures in the right margin indicate full marks. Answer Four (4) questions from each section. 1 & 6 questions are compulsory. Use separate answer script for each section. Split answer is not allowed.)

Section-A

1. a) Give an example of Qualitative, Continuous and discrete variables each and also mention in which scale you can measure the variables? 3
- b) Name four graphs by which quantitative data can be presented. If you are given a data set including colour of fruits- green red and orange, which graphs would you prefer to present this data set? 5
2. a) What are the most commonly used measures of central tendency. Which is best measure and why? 5
- b) Suppose you are given a data set of the member of eggs consumed by 10 families per week: 11, 10, 15, 17, 7, 9, 10, 12, 11, 16 . Compute any two measures of central tendency and comment. 4

3. a) Find appropriate measure of location for the following data: 3

Flavour	Vanila	Chocolate	Strawberry	Cherry	Almond mocha
No. Performing	149	370	90	60	220

- b) Compute first quartile, second quartile, fifth decile, 50th percentile from the following : 6
 22, 18, 20, 23, 17, 19, 20, 22
4. a) What is type I and Type II error? Define power of a test. 3
- b) Suppose, departmental store 'Agora' has two branches in Chittagong. One is located at Nasirabad and the other is at Khulshi. Each shop is managed by two different managers and each of them claims that his store's layout maximizes the amounts of customers who will purchase on impulse. The data of the survey of both managers on their customers on how much they spent on impulse in a month is - 6

Particulars	Nasirabad Agora	Khulshi Agora
Mean	59	46
Variance	3.65	2.24
Size	25	20

Test if there is any significant difference in the mean amounts purchased on impulse at two stores. use $\alpha = 0.05$

(given $t_{0.05,45} = 1.679, t_{0.025,43} = 2.017, t_{0.025,45} = 2.014$)

5. a) Define skewness and Kurtosis. Suppose the 3rd and 4th central moments of a distribution are 18.64 and 1110.15. The standard deviation is 7.887. Find the coefficient of skewness and Kurtosis and comment. 5
- b) Comment on the shape characteristics of the distribution of baked cakes whose 4
 1) mean = 2kg, median = 1.5 kg, mode = 1 kg
 2) mean = 0.5 kg, median = 0.7 kg, mode = 1 kg

Section -B

6. a) Which tests will you perform under the following conditions: 3
 - i) Population mean with a specific value when sample size is small and population variance is known.
 - ii) Difference between two population means when sample size is large and population variance is unknown.
 - iii) Independence of attributes.

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 2nd Semester Final Examination, 2015
Subject: Tea, Coffee, Cocoa and Spices Technology(Theory)
Course Code: TCS- 302

Full Marks: 55

Time: 3 hours

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

Section-A

1. a) Which term is appropriate for tea-fermentation or Oxidation and why? 2
b) What are the aims of mulching which is generally performed in young tea? 2

2. a) Give the composition of green tea leaf and fresh tea shoots. 3
b) How quality of green leaf can be analyzed?-Describe in brief. 3
c) State the concept of biochemistry of oxidation. 2

3. a) What are the functions of theaflavin and thearubigin? Write down the composition of dry leaf when it is well withered and correctly manufactured. 3
b) Discuss the mechanism with diagrammatic figure of fermentation in tea leaf. 2
c) How can you separate caffeine by using CO₂? What are the functions of EGCG? 3

4. a) What do you mean by Organic tea and clone tea? Describe the manufacturing process of green tea. 3
b) How green tea leaves are conditioned prior to rolling? What type of dryer is used in tea processing? Draw a schematic figure of a tea dryer. 3
c) State the characteristics of dry leaf that are considered as a parameter in quality standard specifications for processed tea. 2

5. a) What do you mean by tea tasting and tea quality? Give a flow chart of brewing tea for tasting. 3
b) How withering maintains the quality of tea? State the equation of withering percentage with an example. 3
c) Describe the factors that affect in tea oxidation. 2

Section -B

6. a) Sketch and label the crucial portion in a typical structure of a coffee bean. 3

7. a) Give an overview of coffee plant and state its environmental demands. 2
b) How coffee berry is processed by fermentation? What are the adverse effects of caffeine? 3
c) Enlist the commercially cultivated species of coffee. How coffee cherry is harvested? 3

8. a) Define Cocoa and Cocoa butter. Describe the manufacturing process of Chocolate and Cocoa powder. 3
b) Classify Chocolate with specific composition. 2
c) Write short notes on the following terms: i) Imitation Chocolate, ii) Deodorization of cocoa butter, iii) Defects of Chocolate. 3

9. a) What is bulk density? "It is considered as a parameter in quality standard specifications for spice"- explain it briefly. 4
b) Define active plant constituents. Enumerate the major flavour and colour compounds in herbs and spices. 4

10. a) Mention the general functions of spice and what is the role of spices in cookery? 3
b) Define adulteration. Categorize adulterants. What sort of adulterants is found in tea & spices and how they can be identified and checked? 5

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 2nd Semester Final Examination, 2015
Subject: Applied Dietetics (Theory)
Course Code: APD-302

Full Marks: 55

Time: 3 hours

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

Section-A

1. a) Define dietetics, dietitian and therapeutic diet. What career opportunities are available to dietitian? 3
b) Differentiate between kwashiorkor and marasmus. 5
2. a) Describe the calculation procedure of Body Mass Index (BMI). 2
b) What is World Health Organization (WHO) cut off points of BMI are used to detect the three grade of being obesity. How can you assess the obesity by using different parameters? 4
c) Write the principles of dietary management in obesity. 4
3. a) Define Diabetes Mellitus (DM). Briefly describe the insulin synthesis in the beta cell. 5
b) What are the risk factors of type-2 DM? Briefly describe the dietary management of type - 2 DM. 5
4. a) Define balanced diet. Mention its characteristics. 3
b) Differentiate between diet and balanced diet. 3
c) Explain the principles of planning and preparing a menu. 6

Section-B

5. a) Explain anoxia nervosa and bulimia nervosa. 3
b) Plan a day's diet of an adolescent girl suffering from nutritional anemia. 4
6. a) Describe the role of fat in the case of atherosclerosis. Write down the components of DASH diet for hypertensive patients. 5
b) Mention the risk factors in heart disease. Write the clinical identification of metabolic syndrome. 5
7. a) Define oliguria and azotemia. Draw the sequences of reactions leading to kidney failure. 5
b) Describe the general principles of dietary management in renal diseases. 5
8. a) What do you mean by Cholecystitis and Cholelithiasis? How does Jaundice develop in cirrhosis? 5
b) Give a day's diet for a patient with infective hepatitis. 5

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 2nd Semester Final Examination, 2015
Subject: Food Trade and Laws
Course Code: FTL-302

Full Marks: 35

Time: 2 hours

(Figures in the right margin indicate full marks. Answer **Four (4)** questions from each section where Question **1** and **6** are compulsory. Use separate answer script for each section. Split answer is discouraged.)

Section-A

1. Illustrate the functions of Bangladesh Standards and Testing Institution (BSTI) in food industry. 3
2. What do you mean by International Organization for Standardization (ISO)? Write the corrective actions for process improvement in future. 5
3. Define free trade. What are the differences between domestic and international trade? 5
4. How social and political forces interact in the development of food law and regulation? 5
5. Explain the relationship between eco-labeling and trade. 5

Section-B

6. Define management system. 2
7. Briefly discuss resources model of international trade. 5
8. Define trade facilitation. How do you construct trade development strategy? 5
9. Enlist popular standards of ISO. 5
10. How can you identify the process of an organization? 5

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 2nd Semester Final Examination, 2015
Subject: Fermentation and Beverage Technology (Theory)
Course Code: FBT-302

Full Marks: 70

Time: 3 hours

(Figures in the right margin indicate full marks. Answer 4 questions from each section. 1 & 6 Questions are compulsory. Use separate answer script for each section. **Split answer is not allowed.**)

Section-A

1. Draw a labeled diagram of a typical fermenter for aerobic process. Make a list of different components of a fermenter and respective function (s) of each component in fermentation process. 5
2. a) Write down the effects of fermentation on foods. 3
b) What do you mean by "LAB"? 2
c) Draw the schematic diagram of fermentation process. 5
3. a) Define fermenter. Write down the differences between fermenter and bioreactor. 2
b) Enlist the control parameters of a typical fermenter with their ranges. 3
c) Describe the cleaning and sterilization of a fermenter. 5
4. a) With specific examples classify agitators. 3
b) How aseptic aeration system can be arranged for an aerobic microbial fermentation process? 5
c) What are the approaches can be employed to encounter excessive foaming problem during fermentation? 2
5. a) What is cheese? Write down the composition of cottage cheese. 2
b) Write down the name of microorganisms used in butter fermentation. 2
c) Write down the manufacturing procedure of alcohol. 6

Section-B

6. a) What is beverage? Classify beverages. 2
b) Define carbonation. Draw the schematic diagram of carbonation methods. 3
7. a) Describe a process for propagating pure yeast for beer fermentation. 5
b) Summarize the effects of aging process on beer quality 2
c) What are hops? When and why are hops added during beer brewing process? 3
8. a) Is it important to treat water prior to use it in the final formulation of soft drink ingredients? 2
b) Describe a process of preparation of sugar-syrup for the production of a typical carbonated soft drink. 6
c) Why are preservatives and antioxidants added to soft drinks? 2
9. a) Define inocula. Write down the criteria for transfer of inocula. 4
b) Brewer's yeast is grown continuously in a fermenter with an operating volume 12 m^3 . The residence time is 20 h and the yeast has a doubling time of 3.2 h. A 2% inoculum, which contains 5% yeast cells, is mixed with substrate. Calculate the mass of yeast harvested from the fermenter per hour. (Assure that the density of the broth is 1010 kg/m^3) 6
10. Write down the short note on (Any two) 10
a) Wine
b) Vodka
c) Rum

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 2nd Semester Final Examination, 2015
Subject: 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 where question no. 1 and 5 are compulsory. Use separate answer script for each section. Split answer is discouraged.)

Section-A

1. a) What do you mean by the term "Dairy Technology"? 2
 b) Write down the application and scope of dairy technology in food industry. 6
 c) List the products those obtained from milk and mention their shelf life in normal temperature. 3

2. a) Classify common dairy products available in Bangladesh with examples. 3
 b) What do you mean by neutralization of cream in butter making? State the principles of churning of cream during butter manufacturing. 4
 c) Briefly describe the churning process of cream during butter manufacturing? 5

3. a) What are the factors responsible for more fat loss in skim milk during cream separation? 5
 b) Write down the procedure of manufacturing ghee in an organized dairy plant. 5
 c) Mention the common defects in ghee. 2

4. Write short notes (any four) on 3×4= 12
 a) Chocolate milk b) Cultured butter milk c) Mother starter culture
 d) Dairy by-products e) Reconstitute milk

Section B

5. Write appropriate words/phrases to complete the sentences 11×1= 11
 a) The advantage of using earthenware for dahi making is -----
 b) Butter contains at least-----% fat
 c) Eye of Swiss cheese contains-----
 d) Rennet contains-----
 e) Rennet works well at -----^oc temperature.
 f) The ratio of water and sugar should be -----in case of rosogolla.
 g) Butter oil contains -----% moisture.
 h) Ghee is the ----- fat.
 i) ----- is called the "Glamorous Lady" of dairy products.
 j) Evaporated milk contains at least -----% sugar.
 k) Atomizer is used for----- preparation.

6. a) What is ice-cream? Write down the role of dairy and non-dairy ingredients in ice-cream manufacturing. 5
 b) Write about over-run in ice-cream and its control. 3
 c) Mention the defects and remedial measures of ice-cream. 4

7. a) Differentiate infant milk food, malted milk food, dairy whitener. 4
 b) Write the manufacture of skim milk powder. 5
 c) Indicate the composition of condensed and evaporated milk. 3

8. Write short notes (any four) on 4×3= 12
 a) Hard and soft cheese b) Kulfi and milk ice c) Cream separation from milk
 d) Dahi and yoghurt e) Handling, transporting and marketing of dairy products.

Chittagong Veterinary and Animal Sciences University

Faculty of Food Science and Technology

BFST 3rd year 2nd Semester Final Examination, 2015

Subject: Food Safety and Hygiene (Theory)

Course Code: FSH-302

Full Marks: 70

Time: 3 hours

(Figures in the right margin indicate full marks. Answer 4 questions from each section. 1 & 6 questions are compulsory. Use separate answer script for each section. **Split answer is not allowed.**)

Section-A

1. a) What is safety? Discuss about safety principles. 3
b) Define the following: 2
 i) Safety factor
 ii) RIDDOR
2. a) Classify chemical hazards occurred in food. 3
b) Describe the biological hazards of food. 4
c) What are the methods of hazard control? 3
3. a) What is food safety management system? Why is it required? 3
b) Discuss briefly documentation process of food safety management system. 5
c) What is allergy? Write down the name of common foods associated with allergy. 2
4. a) What do you mean by food-borne infections? Give some examples. 2
b) How could you control food-borne illness? 4
c) Discuss about toxic effects of some metals and chemicals. 4
5. a) Write about safety policy. 3
b) Define the following food safety terms: 5
 i) Hot hold
 ii) Internal temperature
 iii) Potentially Hazardous Food (PHF)
 iv) Critical limit
 v) GMP
c) How does human factor affect on health and safety? 2

Section-B

6. a) Discuss the factors those effect bacterial growth. 3
b) Mention symptoms of food poisoning. 2
7. a) What is risk assessment? Why is it important to review and monitor your risk assessment? 4
b) Draw the flow diagram of basic risk management system. 3
c) Discuss about different risk level. 3
8. a) Discuss importance of washing hands in food safety. 3
b) Mention general chemical safety guidelines. 3
c) Write down common food pests and hazard associated with those pests. 4
9. a) Write general principles of food hygiene. 3
b) Describe high temperature methods for food preservation. 3
c) Explain in brief common types of work related accidents and ill health. 4
10. Discuss the following:
a) Food poisoning complaints and action 3
b) Documents for risk assessment 3
c) PPE 2
d) Temperature danger zone 2

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 2nd Semester Final Examination, 2015
Subject: 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 4 questions from each section. 1 & 6 questions are compulsory. Use separate answer script for each section. **Split answer is not allowed.**)

Section-A

1. a) What do you mean by reducing sugar and inverted sugar? 3
b) Define massecuites and mud in sugar. 2
2. a) In an evaporator, temperature and brix value of the inlet juice are 20° C and 15° Bx. How much heat is required to get the temperature of 60° C and 65° Bx for 2 kg juice with specific heat of 1.1 cal/kg. Also calculate the weight of syrup percentage (%) for this system. 4
b) Discuss about the single effect evaporation system in industries. Identify the indicators for which single effect evaporation system is necessary. 4
c) What do you mean by logarithmic mean temperature difference? 2
3. a) Discuss the principle of vacuum evaporation. 4
b) Write the industrial uses of vacuum evaporation. 3
c) Why is multiple effect evaporator used instead of single effect evaporator? 3
4. a) Discuss the principles of sulphitation process. 4
b) Why concentration of sugar syrup is necessary. 2
c) Write the compositions of sugar cane and sugar syrup. 4
5. a) Why lime is used in sugar industries. Write the reactions involved in lime treatment in clarification. 5
b) Write the roles of temperature and pH in clarification. 3
c) How you can separate Iron, Alumina, wax and gum from sugar juice. 2

Section-B

6. a) Specifically write the crystal growth mechanism. 3
b) What is bagasse? How we can utilize it? 2
7. a) Discuss about the refining and finishing operations in sugar cane industries. 4
b) What is azeotropic mixture? Is it possible to separate water from rectified spirit? 3
c) Discuss your opinion about the prospects of sugar beet harvesting in Bangladesh. 3
8. a) What is Environmental Impact Assessment (EIA)? Discuss about the identification, scoping and management procedures followed in EIA. 6
b) Write the air emissions and waste water parameters that are considered for pollution from sugar industries. 4
9. a) What is molasses? 2
b) Write the composition of molasses. 2
c) Discuss the production of motor spirit from molasses. 6
10. a) Name the sugar industries in Bangladesh with their locations and capacity of productions. 3
b) Discuss the problems and prospects of sugar industries in Bangladesh. 7

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 2nd Semester Final Examination, 2015
Subject: Food Packaging (Theory)
Course Code: FPK-302

Full Marks: 70

Time: 3 hours

(Figures in the right margin indicate full marks. Answer 4 questions from each section. 1 & 6 Questions are compulsory. Use separate answer script for each section. **Split answer is not allowed.**)

Section-A

1. What do you mean by packaging? Briefly describe about the history of packaging. 5
2. a) What is product labeling? With a neat sketch show the different types of information of a labeling. 5
b) What is shelf life? How can you determine the shelf life of packaged food product? 5
3. a) Briefly discuss the main advantages and disadvantages of using glass as a packaging material. 3
b) Enumerate sources of the off-odors or off-flavors in a product of packaging material itself. List common causes of taint in a packaging material. 4
c) Briefly illustrate the terms: i) Recycle and ii) Re-use. 3
4. a) Which types of properties are considered during choosing of packaging materials? Describe. 4
b) Write down the packaging process of the following food: 6
 i) Respiring fruits and vegetables
 ii) Pasteurized products
 iii) Bear and soft drinks
5. a) Write a short note on "biodegradable plastic". 2
b) What are the requirements and functions of containers? 3
c) Shortly describe about ten types of containers. 5

Section-B

6. Write a short note on "thermoforming process". 5
7. a) Write down different types of raw materials of pulp making for the production of paper. 3
b) Describe deinking process with flow chart. 3
c) What are the reasons of using fillers, sizing agents and coloring agents during paper making? 4
8. a) What is aluminium foil? What are advantages of using aluminium foil? 4
b) What are anealing? Describe the production process of double reduced tin plate. 6
9. a) Enumerate the standard methods for package testing. 3
b) Briefly illustrated the following testing property of packages: i) Seal strength ii) Heat seal and iii) Adhesion. 4
c) Which raw materials are used for the production of glass? 3
10. a) Classify paper as packaging materials. 2
b) Give the percentage of consumption of different types of packaging materials. 2
c) Starting with raw materials describe the production of glass containers by "blow and blow" and "press and blow" process. 6