

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 2nd Semester Final Examination 2016
Subject: Tea, Coffee, Cocoa and Spices Technology (Theory)
Course Code: TCS-302

Full Marks: 35

Time: 2 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 not allowed.)

Section-A

1. What do you mean by tea agro-technique? How tea is propagated? 4
2. a) Mention the composition of dry leaf when it is well withered and correctly manufactured. 2
b) What are the compounds those keep a vital role in tea colour, liquor flavour and texture? 2
c) Sketch a diagrammatic figure of tea leaf cell with proper indication of components that are very essential for oxidation process of black tea. 3
3. a) Write down the composition of Black tea and green tea. 2
b) Describe the manufacturing process of orthodox tea. 3
c) What is withering? How withering maintain the quality of tea? 2
4. a) What is tea quality and tea tasting? Why tea is tasted? State the characteristics of the terms describing the tea liquor. 2
b) Sketch and label the crucial portion in a typical structure of coffee and cocoa bean. 2
c) Describe the manufacturing process of coffee. 3

Section-B

5. How coffee bean is harvested? 3
6. a) Write down the composition of coffee Arabica before roasting. 2
b) Enumerate the commercially cultivated species of coffee. What are the adverse effects of caffeine? 3
c) How can you differentiate spice from herbs? 2
7. a) What kind of quality should be maintained as emergence for spices? 2
b) Enumerate the major colour and flavour compounds found in herbs and spices. 2
c) What is bulk density? Mention the general functions of spice and what is the role of spices in cookery? 3
8. a) What do you mean by cocoa, cocoa butter and chocolate? Describe the manufacturing process of chocolate. 4
b) Write short notes on the following terms: i) Imitation chocolate, 3
ii) Decaffeination of tea and
iii) Deodorization of cocoa butter.

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 2nd Semester Final Examination, 2016
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 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 strongly discouraged.)

Section-A

1. a) What do you mean by "Respiration without air"? 2
b) What is solid state fermentation? Give some examples of solid state fermentations used commonly. 3
2. a) Mention the name of microorganisms cause biodegradation in aerobic digestion. Discuss the process of aerobic digestion. 4
b) Discuss the environmental and economic benefits of anaerobic digestion of waste residue. 3
c) Write down the role of aerobic digestion in the environment. 3
3. a) What do you mean by ethanol fermentation? Discuss about the overview of ethanol fermentation. 4
b) Write down the commercial importance of fermentation. 6
4. a) What are the differences between batch culture and continuous culture? 2
b) Briefly discuss about the chemistry of fermentation. 4
c) Write down the benefits and pitfalls of fermentation. 4
5. a) Define fermentor. Imagine a fermentor is given to you, how can you identify this is ideal one? 5
b) Classify fermentors. 5

Section-B

6. a) Define carbonated beverage. 1
b) Define "Soft drinks". Why it is called "Soft"? 2
c) Differentiate between soft drinks and hard drinks. 2
7. a) How you ensure the water quality used in soft drink preparation? 4
b) Describe the process and procedure of water and sweeteners addition in soft drinks. 6
8. a) Discuss about the ingredients of soft drinks. Give the technological flow-sheet of soft drink manufacturing. 5
b) What is "Brewing"? Briefly discuss about the brewing process. 5
9. a) What are the differences between white wine and red wine? 2
b) Why yeast produce alcohol in beer but not in bread making? 3
c) Write down the manufacturing process of white wine with technological flow-sheet. 5
10. a) Discuss about the white rum and gold rum. 4
b) What do you mean by "Styles of rum"? 4
c) Why Vodka is called "Wife's deceiver" – Explain. 2

(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 strongly discouraged.)

Section-A

1. a) How many ways does cross contamination occur during food preparation? Explain. 3
b) Discuss the followings- 2
 i) Evidence of food infestation.
 ii) Defrosting condition.
2. a) What is the difference between Control Point (CP) and Critical Control Point (CCP)? 3
b) Discuss briefly the seven stages of HACCP process. 7
3. a) Draw a brief outline of food safety management system. 3
b) What are the microbiological considerations in food safety? 4
c) Verify and prove the statement stated as following- "No food is completely risk-free." 3
4. a) Define food-borne illness. Give some examples. 2
b) How would you control food-borne infections? 4
c) Write down the personal effects of materials to be considered as a physical hazard. Name the sources and injury potential of those materials. 4
5. a) What do you mean by the term "Work Place"? Enumerate duties of employer and employees to ensure safe work place. 4
b) Discuss about the monitoring and reviewing procedure in hazard management system. 3
c) What is risk? What do you understand by the term "adverse health effect"? 3

Section-B

6. a) Discuss about toxic effects of some metals. 3
b) Mention the functions of disinfectant, detergent and sanitizer. 2
7. a) Mention hazards those may be identified in working environment. 2
b) How do you do a risk assessment? 4
c) How do you rank or prioritize risk? 2
d) Draw flow chart of basic risk management system. 2
8. a) Write down common food pests and how to prevent those pests. 4
b) Mention symptoms of food allergens on human body. 2
c) What are near misses? What instruments does a "First Aid Kit" may include? 4
9. a) Describe high temperature methods for food preservation. 3
b) What do you mean by critical limit? 2
c) Write down the documents for risk management. 5
10. Write short notes on the following terms- 10
a) RIDDOR
b) PPE
c) Temperature Danger Zone
d) PHF

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 2nd Semester Final Examination, 2016
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 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 strongly discouraged.)

Section-A

1. a) Give an average composition of sugar cane juice. 3
b) Explain what is meant by the term "Refined sugar" and "B.P. grade sugar". 2
2. a) What is the function of evaporators in a sugar manufacturing plant? 4
b) Explain the benefit of multiple effect evaporators over a single effect evaporator. 6
3. a) Discuss in details about the sulphitation process in sugar manufacturing industries. 7
b) Write the reactions involved in defecation process. 3
4. a) How can refined sugar be obtained from raw sugar? 5
b) Discuss the factors that influence clarification of sugar juice. 5
5. a) What do you mean by evaporation? Discuss about the overall heat transfer co-efficient and energy efficiency improvement of evaporation. ✓ 5
b) Discuss in detail about the crystal growth mechanism. 3
c) How you can separate crystals from solution? 2

Section-B

6. Explain the following terms related to manufacture of cane sugar: 5
a) Affination.
b) Defecation
c) Masseccuites
d) Molasses
e) Brix
7. a) Discuss the role of lime in clarification. 2
b) Draw the flow chart of manufacturing of sugar from sugarcane. 6
c) How sucrose concentration reduces if not properly treated in clarification? 2
8. a) How waste water is generated from different sections of sugarcane industries? 4
b) What do you mean by EIA and EMP? Why these assessments are necessary for industrial operations? 4
c) Write the air and water parameters are considered for pollution. 2
9. a) What is meant by (i) Rectified spirit (ii) Methylated spirit (iii) Absolute alcohol and (iv) power alcohol- explain. 4
b) Discuss a process for the manufacture of industrial alcohol from molasses. 6
10. a) Explain why water present in industrial alcohol cannot be removed completely by distillation/rectification. 4
b) Discuss briefly different types of possible environmental pollution caused by a cane sugar manufacturing unit. 6

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 2nd Semester Final Examination, 2016
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 (03) questions** from each section where **question no. 1 and 5 are compulsory**. Use separate answer scripts for each section. **Split answers are strongly discouraged.**)

Section-A

1. a) Write down the average composition of cow's milk. 2
b) Describe the common quality problems of milk and milk products. 6
c) What are the opportunities of studying dairy technology in Bangladesh? 3
2. a) List four types of cheese. State percentages of moisture fat, protein, salt and ash in each of them. 4
b) Mention all the defects that occur in condensed and evaporated milk and state how are is high their occurrence prevented? 5
c) Explain properties of ice-cream mixture. 3
3. a) Classify cream and write the principles of cream separation. 4
b) What can be happened during cream separation if 4
 i) the cream separator is vibrated;
 ii) the acidity of milk is high;
 iii) the temperature of milk is low; and
 iv) the milk contains small fat globules.
c) Discuss the industrial method of cream separation. 4

Write short notes (anyfour)

3X4=12

i) Condensed milk; ii) Dhaka Cheese; iii) Ghee; iv) Dairy by-products; v) Milk shake; and vi) Food value of ice-cream.

Section-B

5. a) What is over-run in butter? 2
b) Explain the terms-- dairy butter; ripened cream butter; cold storage butter and creamery butter. 4
c) Briefly discuss the manufacturing steps of dairy butter 5
5. a) How will you prepare sweet dahi by using starter culture in an organized dairy industry? 5
b) Write the characteristics of good dahi. 3
c) How are *Streptococcus thermophilus* and *Lactobacillus bulgaricus* complementary to each other in yoghurt making? 4
7. a) What is rennet? Mention its properties. 3
b) How will you prepare rennet commercially from calf? 3
c) Mention the principles of cheese making. 3
d) List the common defects of cheese with causes. 3

Write short notes (any four)

3X4=12

i) Infant milk food; ii) Flavour defects in market cream; iii) Rasogolla; iv) Eyes of Swiss cheese; v) BDS of butter; and vi) Flavoured milk

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 2nd Semester Final Examination, 2016
Subject: Applied Dietetics
Course Code: APD-302

Full Marks: 35

Time: 2 hours

(Figures in the right margin indicate full marks. Answer any Two (2) questions from each section where question no. one (1) and Four (4) are compulsory. Use separate answer script for each section. Split answer is strongly discouraged.)

Section-A

1. a) Describe the clinical identification of metabolic syndrome and its consequences. List nutritional risk factors of heart diseases. 4
b) "Obese patients are at higher risk in surgery"- Justify it. 3
2. a) Discuss the dietary management of acute phase in Protein Energy Malnutrition (PEM) patient. 5
b) What are the goals of pre-operative nutritional support? How pre-operative nutritional support is assessed? 5
3. a) What is the necessity of dietary changes in special physiological state? 2
b) What considerations should be made for extra dietary requirements of pregnant and lactating mothers? 5
~~c) Differentiate between enteral and parenteral nutrition. 3~~

Section-B

4. ~~a) Define balanced diet with its characteristics. 3~~
b) What do you mean by modified diet? Classify diet with example. 5
5. a) Write the physiological changes during pregnancy. What are the problems usually faces during pregnancy and how to manage it? 5
b) Discuss the vitamins and minerals requirements during pregnancy. 5
6. a) Write the functions of liver. Classify Hepatitis. What is Jaundice? 4
b) "Tube feedings are not advised for the patients suffering from liver cirrhosis"- Explain it. 2
c) Discuss the dietary management of hepatitis with its purpose. 4

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFAST 3rd year 2nd Semester Final Examination, 2016
Subject: Statistics (Theory)
Course Code: STC-302

Full Marks: 70

Time: 3 hours

(Figures in the right margin indicate full marks. Answer any three (03) questions from each section where question no. 1 and 5 are compulsory. Use separate answer scripts for each section. Split answers are strongly discouraged.)

Section-A

1. a) Define statistics. What is the necessity of studying statistics as a student of food Science and technology? 4
- b) Distinguish between: i) Population and sample; ii) Bar diagram and Histogram; iii) Discrete and continuous variable. 3
- c) Briefly discuss the commonly used graphs in Statistics. 4

2. a) Define bivariate distribution and contingency table. Compare between correlation and regression. 4
- b) The following data gives the weight (in kg) and ages (in days) of randomly selected 10 chickens from a poultry farm: 3

Weight : 1.0, 1.1, 1.2, 1.3, 1.4, 1.45, 1.50, 1.55, 1.60, 1.65

Ages : 18, 19, 21, 22, 24, 25, 27, 30, 32, 35

Fit a regression line of weight on age of chickens. Predict the weights of chicken. When the age of chicken will be 40 days?

- c) Show the rank correlation co-efficient between two ranks, $r = 1 - \frac{6\sum di^2}{n(n^2 - 1)}$ 5

3. a) Distinguish between classification and tabulation. 3
- b) The following frequency distribution shows the length of Hilsa fish caught on a certain day at a certain point of Padma. 5

Class Interval (Length in cm)	No. of fishes caught	Class In (Length in cm)	No. of fishes caught
25-30	39	45-50	15
30-35	45	50-55	8
35-40	52	55-60	6
40-45	75	-	-

Point out the following issues with the help of the above frequency table:

- Frequency density of the penultimate (2nd last) class interval;
- Mid-value of the modal class;
- Lower of the median class;
- Size of the 5th class interval;
- Percentages of fishes having length below 45 cm;
- Relative frequency of the class 40-45. 75

- c) Draw a Ogive curve for the above frequency distribution and hence locate median length of the fishes. 4

4. a) What do you mean by experiment and experimental error? What are the basic designs of experiment? 4
- b) Compare among CRD, RBD and LSD. Which one is the best design of experiment? 5
- c) Set an example of RBD in your own field and identify treatment, block, experimental unit and yield. 3

Section-B

5. a) Define measures of dispersion. Write the measures of dispersion with the necessities of relative measures of dispersion. 4
- b) Prove that, standard deviation is independent on changes of origin but not on scale. 4
- c) Write short notes on Skewness and Kurtosis. 3

6. a) Define (i) Type-I and Type-II error (ii) Power of a test. 2
- b) Which test statistic will be performed under the following conditions? 6
- (i) To test significance of difference means when the sample size is small and variance known. $t = \frac{\bar{x} - \mu_0}{s/\sqrt{n}}$
- (ii) To test the independence of attributes. $\chi^2 = \frac{(O-E)^2}{E}$
- (iii) To test population variance with a specific value. $\chi^2 = \frac{(n-1)s^2}{\sigma_0^2}$
- c) A random sample of 20 pairs from a bi-variate normal population showed a correlation co-efficient is 0.47. Is this value significant of correlation in this population? 4

7. a) State and prove the additive law of probability for two events. 4
- b) Two colors of apples (green and red) were served at dinner in a hotel. A person ate two apples at dinner.
- i) Construct the sample space.
- ii) Find the probability that first apple will be green;
- iii) Verify whether the events "green on the first apple" and "red on the second apple" are independent or not.

- c) Suppose the probability that a food science graduate gets a job is 0.8, 5 food science graduates applied for a job. What is the probability that
- i) Exactly 2 graduates will get the job $P(2)$
- ii) None will get the job $P(0)$
- iii) All applicants will get the job $P(5)$
- $P(AB) = P(A)$

8. a) Define one tail test and two tail test. 2
- b) State the basic principles of experimental design. Discuss in brief any one basic principle. 6

c) The manager of a departmental store claims that his shop sells 110 eggs on average daily. A random sample of a 15 days gives the following data set: 110, 118, 130, 140, 142, 146, 112, 100, 65, 98, 96, 122, 123, 124, 130. It is known that the number of eggs sold by the store follows normal distribution with variance 300.

Can we conclude at 5% level of significance that the average daily sell of eggs of that store is i) 110 items ii) More than 100 items? (Use $z_{.35/2} = 1.645$ and $z_{.05} = 1.645$) 4

$$z = \frac{\bar{x} - \mu_0}{s/\sqrt{n}} = \frac{117 - 110}{6/\sqrt{15}}$$

$H_0: \mu \geq 110$

$H_1: \mu > 110$



$\bar{x} = 100$

$\frac{\bar{x} - \mu}{\sigma} = \frac{100 - 110}{6} = -1.667$

$z > 1.645$

$z > 0.237$

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 2nd Semester Final Examination, 2016
Subject: Food Packaging (Theory)
Course Code: FPK-302

Full Marks: 70

Time: 3 hours

(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 strongly discouraged.)

Section-A

1. What do you mean by packaging? Write down the functions of food packaging. 5
2. a) Why polymers are used increasingly in food packaging? 3
b) Briefly discuss injection molding and thermoforming process for plastic packaging. 7
3. a) What is shelf life? What are the factors that influence the shelf life of food products? 3
b) Briefly discuss the advantages and disadvantages of using plastics as packaging materials. 3
c) Which types of properties are considered during choosing of packaging materials? Describe. 4
4. a) Classify paper as packaging materials. 3
b) Write down the specifications and features of one sealing machine. 3
c) Briefly describe flow process (press and blow) for the production of glass packaging. 4
5. a) Describe extrusion molding with a neat diagram. 5
b) Classify the methods of forming glass containers. 5

Section-B

6. Write a short note on "Food spoilage bacteria". 5
7. a) What are the raw materials for paper manufacturing? 2
b) What are the advantages of paper as packaging materials? 2
c) Discuss the production process of tin plate. 6
8. a) What is aluminium foil? What are the advantages of using aluminium foil? 4
b) With a flow diagram describe the Kraft pulping process for paper packaging. 6
9. a) What type of environment is suitable for food packaging? Describe. 4
b) Write down the packaging process of the following food: 6
i) Fresh meat.
ii) Dehydrated foods.
iii) Sugar confectionary.
10. Define any 05 (five) of following: 10
a) Traceability
b) Plastication
c) Ingot
d) Critical moisture content
e) Tertiary packaging
f) MAP