

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 1st Semester Final Examination 2018
Subject: Technology of Fruits and Vegetable Products(Theory)
Course Code: FVP-301 (T)

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. Describe the role of food technologist in reducing fruits wastage while ignorance is the main reason. 5

2. a) How do you differentiate between fruits and vegetables morphology? Give a brief account of physiological development of fruits and vegetables. 3+3=6
 b) What do you mean by maturity indices? What changes are observed in fruits and vegetables on the eve of ripening? 1+3=4

3. a) Discuss the antimicrobial properties of salt and acid. 5
 b) Give standard definition for vinegar. Describe in brief the alcoholic fermentation and acidification method for manufacture of vinegar. 1+4=5

4. a) Define clarification. Briefly illustrate the different methods of clarification that are used during processing and preservation of unfermented fruit beverages. 1+4=5
 b) What do you mean by climacteric and non-climacteric fruits? Indicate the effects of ethylene on the ripening of climacteric and non-climacteric fruits. 2+3=5

5. a) Briefly describe the production procedure of tomato ketchup. 5
 b) What types of defects are encountered during processing of jelly? Indicate them with possible remedies. 5

Section-B

6. Differentiate in tabular form among Nectar, Cordial, Squash, Crush, RTS and Syrup in respect to T.S.S, acidity, preservatives and necessity of dilution. 5

7. a) Distinguish among the following items: i) Jam, Jelly and Marmalade, 3 x 2=6
 ii) Chutney, sauces and ketchup.
 b) Differentiate among preserves, candies and crystallized fruits. 4

8. a) Give a flow sheet for manufacture of preserves and candies. 5
 b) Indicate the problems encountered in manufacture of sauce/ketchup. 5

9. a) Define controlled atmosphere (CA) and modified atmosphere (MA). Enumerate in brief the factors influencing the adoption of CA/MA storage for fruits and vegetables. 2+3=5
 b) Define dehydrofreezing and rehydration ratio with example. Compare between natural and artificial dehydration. 2+3=5

10. a) Give a flow chart for commercial canning of fruits and vegetables. Write down the defects of canning. 2+3=5
 b) Define pickles. Mention the problems which are encountered in pickle manufacturing. 1+4=5

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 1st Semester Final Examination 2018
Subject: Food Bio-Technology (Theory)
Course Code: FBT-301 (T)

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. Briefly discuss the key features and applications of food biotechnology. 5
2. a) Briefly explain bioprocess operations with appropriate schematic diagram. 6
b) Explain the prevalent techniques of culture preservations. 4
3. a) Write short notes on-i) polymerases, 2+2=4
ii) Lipases.
b) Briefly explain the different steps of producing recombinant DNA with appropriate diagram. 6
4. a) What is cloning vector? Explain the ranges of fermentation process. 1+4=5
b) Describe the types of aerobic bioreactors depending on how gas is distributed. 5
5. a) Derive Michalis-Manten equation of enzyme kinetics. 5
b) You are assign to clone an egg lysozyme into E.Coli, What basic steps are used to produce a genetically engineered E.Coli to produce enzyme? 5

Section-B

6. Categorize foods according to modern biotechnology with proper example. What is difference between probiotics, prebiotics and synbiotics? 2+3=5
7. a) What is the first step of gene expression? Briefly describe the phases of "Central Dogma" of molecular biology. 2+3=5
b) How nucleic acids are separated and purified from the cell lysates? 5
8. a) Briefly describe the principle procedure and application of western blotting. 5
b) Write down the transfer phenomenon of oxygen from air to the cellular site of respiration during fermentation. How you determine K_{La} , the volumetric mass transfer co-efficient of a fermenter? 2+3=5
9. a) Classify major gene transfer methods and write down characteristics features of these methods. 5
b) What do you mean by PCR? Describe PCR principles, procedure and application in biotechnology. 1+4=5
10. a) Illustrate the production of citric acid form the mollasses and its recovery and purification with industrial application. 5
b) What are hops? Which compound of hops makes bitterness in beer? Why malt is used in beer? 1+2+20=5

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3th year 1st Semester Final Examination, 2018
Subject: Clinical nutrition (Theory)
Course Code: CLN-301

Full Marks: 35

Time: 2 hours

(Figures in the right margin indicate full marks. Answer **Three (3)** questions from each section where Question no. **five (5)** is compulsory. Use separate answer script for each section. Split answer is strongly discouraged.)

Section-A

1. a) What are the types and causes of diarrhea? 3
b) Write in details the treatment of diarrhea. 3
2. a) Define food allergy. Enlist common food allergens. 2+1
b) How will you treat an allergic patient? 3
3. a) Rahim, a 25 years male suddenly observe swelling in the neck. What types of nutrient deficiency may occur in his body? 3
b) Mention the functions and rich sources of the following nutrients 1*3=3
i. Vitamin-C ii. Iron iii. Calcium
4. a) What is meant by IDA? Write the name of nutrients that are linked with IDA. 1+1
b) State the clinical features of nutritional anemia. 2
c) As a public health expert what policy would you take to reduce the prevalence of nutritional anemia? 2

SECTION-B

5. a) Define gout. What types of food increase serum uric acid level? 1+1
b) How does vitamin-D active in human body? 3
6. a) What is meant by Severe Acute Malnutrition (SAM) and moderate acute malnutrition? 1
b) Write the complications of SAM in Children. Delineate the treatment pattern for SAM children. 2.5*2=5
7. a) Mention the dietary sources and RDA of following micronutrients for pregnant woman 1*3=3
i. Folic acid ii. Vitamin -B₂ iii. Vitamin D
b) How thyroid hormone synthesis in human body? 3
8. a) Briefly discuss the etiology of obesity. 3
b) Explain the clinical features of vitamin A deficiency Disorder (VADD). 2
c) How anemia can be detected? 1

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 1st Semester Final Examination, 2018
Course Title: Oil and Fat Technology (Theory)
Course Code: OFT-301

Full Marks: 35

Time: 2 hours

[Figures in the right margin indicate Full Marks. Answer any three questions from each section where **question no. 1 & 5** are compulsory. Use separate answer scripts for each section. **Split answer is strongly discouraged.**]

SECTION-A

- | | | |
|----|--|------------|
| 1. | a) Discuss about different quality parameters of oil and fat. | 03 |
| | b) Outline the storage principle of oil and fat. | 02 |
| 2. | a) What is Winterization and Deodorization of oil? | 1.5+1.5=03 |
| | b) Define "Saponification Value" of oil. How do you measure Saponification Value of oil and fat? | 01+02 |
| 3. | Discuss briefly about homogenous and heterogeneous catalysis during hydrogenation of oil. | 06 |
| 4. | a) Define refining of crude oil. | 01 |
| | b) Elaborate the chemical degumming of palm oil. | 05 |

SECTION-B

- | | | |
|----|--|------------|
| 5. | Summarize the basic techniques of SFC altering process. | 06 |
| 6. | a) Define the terms Lard and Suet. | 0.5+0.5=01 |
| | b) Draw a flow diagram of essential oil extraction process from seed. | 02 |
| | c) Explain the working principle of Iodine and Peroxide value determination. | 03 |
| 7. | a) What is Malaxation? | 01 |
| | b) Differentiate between drying and non-drying oil. | 02 |
| | c) Discuss the positive and negative effects of triglyceride in human body. | 03 |
| 8. | Write a short note on | 02x3=06 |
| | i) Margarine and Mayonnaise | |
| | ii) Rendering | |
| | iii) Theories of glyceride structure | |

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 1st Semester Final Examination, 2018
Subject: Market Milk Processing Technology(Theory)
Course Code: MMP-301

Full Marks: 35

Time: 2 hours

(Figures in the right margin indicate full marks. Answer **two (2)** questions from section A and **ALL** Questions from Section B. Use separate answer script for each section. Split answer is discouraged.)

Section-A

1. a) Show the flow diagram of processing market milk through HTST method of pasteurization. 3
- b) Classify milk bacteria with example according to optimum growth temperatures. 2
- c) Illustrate the history of cooperative dairying in Bangladesh. 4
2. a) Give the gross composition of milk and colostrum. 3
- b) Describe in detail about the acidity and pH of milk. What is the significance of the acidity test of milk? 3
- c) What is clean milk? What are the importances of clean milk production? 3
3. Write short notes on (**Any three**) 3×3 = 9
 - a) Freezing point of milk.
 - b) Milk-borne diseases.
 - c) Flavoured milk
 - d) Standardization of milk.
 - e) Milk quality control.

Section-B

4. You are a recent graduate of CVASU and appointed as a "Quality Control Officer" in a chilling plant of a modern dairy industry with a capacity of 10000 liter/day. The farmers were not supplied sufficient amount of milk to the plant especially in the morning but the reverse scenario was prevailing in the evening collection. The CIP circuits of bulk coolers in the plant were automatic. On the next day of Eid-Ul-Fitar you are asked by the Plant-in-charge to receive milk in the evening shift and looking after the activities of the plant since most of the employees were in leave. The raw milk was solely transported to the plant by rickshaw van from the societies and farms. The plant has a quality control laboratory with adequate facilities. During receiving milk surprisingly you have seen churned fat on the top of the surface in two cans of incoming milk from a dairy farm. On the eve of receiving milk you are also given a red marker pen by the Plant-in-charge. When the milk has become almost chilled, the milk carrying tanker has arrived to the factory premise. After completing the chilling activities you have delivered milk to the carrying tanker successfully and moved to the sweet home where your beloved has been waiting for you.

Answer the following question from the scenario

- a) List the different types of milk chiller with advantage(s) and disadvantage(s) in terms of operation. 3
- b) What could be the possible reasons of supplying less amount of milk by the farmers during morning? Illustrate the factors affecting quality and quantity of milk production. 5
- c) How CIP is performed in a bulk cooler having automatic CIP circuits? 3
- d) What is the use of red marker pen in the platform of a milk chilling plant? 1
- e) What could be the reason of appearing churned fat in the raw milk? 1
- f) What are the protocol tests for receiving raw milk in the platform? 2
- g) What are the test results and necessary information to be furnished in the delivery papers (challan) during supplying milk from the chilling plant to processing factory? 2

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd Year 1st Semester Final Examination, 2018
Subject: Computer Application in Food Technology
Course Code: CFT- 301 (T)

Full Marks: 70

Time: 3 hours

(Figures in the right margin indicate full marks. Answer Five (5) questions from each section. Use separate answer script for each section. Split answer is discouraged.)

Section-A

1. a) What is structured programming? Briefly describe the structure of C programming. 1+3=4
 b) Briefly describe about the fundamental data types in C. 3
2. a) What do you mean by C Token? Explain with examples. 3
 b) Identify the invalid variables from the following and explain the reasons why they are invalid. 1+1=2
 user_name id# \$subtotal main. 942 nitol value.90
 c) Relationship between Celsius and Fahrenheit is governed by the following formula 2

$$F = \frac{9}{5}C + 32$$

 Write a C program to convert the temperature from Celsius to Fahrenheit. 3
3. a) Determine the value of the following logical expressions if x = 5, y = 10 and z = 20. 1×4 = 4
 i) $x != z \parallel y > x$
 ii) $(x > y) \&\&(y <= 0) \parallel (z >= 0)$
 iii) $(x / 5.0 == 0 \&\& y / 5.0 != 0) \parallel z < 0$
 iv) $2 * ((x / 5) + (4 * (z - 3)) \% (x + z - 2))$
 b) What is identifier? Write down the rules of using an identifier. 1+2=3
4. a) What is the difference between printf() and scanf() functions? 2
 b) State the difference between unary and binary arithmetic operators with example. 2
 c) What is the difference between ++i and i++ ? Find out the output of the following program: 1+2=3

```
#include<stdio.h>
main()
{
int a=2, b=2, x, y ;
x=4*(++a*2+3);
y=4*(b++ *2+3);
printf ("a= %d", b = %d, x = %d, y = %d\n, a, b, x, y);
}
```
5. a) What do you mean by backslash character constant? What are the meanings of the following backslash character constants? 1+4=5
 i) '\b' ii) '\f' iii) '\n' iv) '\O'
 b) Explain with an example how conditional operator works. 2
6. a) How 'do while' loop differs from 'while' loop? 2
 b) In which situations switch statement might be useful to use than if else if statement? 2
 When switch statement cannot be used?
 c) Write a C program that will print the Fibonacci numbers between 1 and 100. 3

Section-B

7. a) What is quadratic equation? Write a program to find the roots of a quadratic equation. 3
b) What is null statement? How can we use for loops when the numbers of iterations are not known? 2
c) Write a program to find the sum of this series upto n terms 2
1+2+4+7+11+16+.....
8. a) Which of the following initialization statements are correct and if incorrect then rewrite the incorrect statement: 1×5 = 5
i) int x[2,4] = {(0,0,0,0), (1,1,1,1)};
ii) double marks[5] = 0;
iii) char str1[] = { 'A', 'R', 'R', 'A', 'Y'};
iv) char str2[] = "CVASU"
v) int x [] [] = {0,1};
- b) What are the functions of # include directive? 2
9. a) What do you mean by function definition, function call and function declaration. 2×3 = 6
b) Distinguish between the following statements: 1
i) x == y ii) x = y
10. a) What is array? Give some examples where array can be used? How can we declare a two dimensional array? 1+1+1=3
b) What do you mean by function? What are the advantages of using functions? 2+2=4
11. a) Write a C program to find all the integer numbers greater than 200 and less than 500 that are divisible by 5. 5
b) Change the following for loop to do while loop: 2
for(n=0; n< 100; n = n+1)
{ printf("%d ", n);
}
12. a) The following is a segment of a program: 4
x = 0;
y = 0;
if(n>0)
x = x++; x-1;
y = y+1;
printf ("%d %d ", x, y);
What will be the values of x and y if n assumes a value of (i) 0 and (ii) 1
- b) Define the following test functions: 1×3 = 3
i) isalpha(x)
ii) islower (x)
iii) isprint(x)

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 1st Semester Final Examination 2018
Subject: Fish Processing Technology (Theory)
Course Code: FPT-301 (T)

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. "Fish is one of the most perishable among food stuff"-justify the statement and give your opinion how to solve the problem in processing aspects. 5
2. a) Give an overview on the composition and characteristics of white and dark muscle of fish. 4
b) Why rigor starts from the tail region of fish? 2
c) Briefly describe the biochemical causes of rigor mortis in fish. 4
3. a) Briefly describe how improper handling and transportation influence the quality of fish. 5
b) What do you mean by fish processing? Write down the general principle of fish processing. 1+4=5
4. a) What is post mortem change? What types of post mortem changes are taken place in fish? 1+3=4
b) Draw the diagram to show the post mortem changes in fish. 6
5. a) Explain the effects of irradiation on fish and fish products. 5
b) Outline the factors affecting quality of fish during chilling. 5

Section-B

6. Discuss the technical problems of canned fish products. 5
7. a) What do you mean by salting? Write down the ~~effect of drying on the quality of fish.~~ *action of salt in fish preservation.* 1+4=5
b) Mention the effects of drying on the quality of fish. 5
8. a) Differentiate between cold smoking and hot smoking. 5
b) Briefly describe the changes associated with freezing of fish. 5
9. a) What is freezing? Describe the types and methods of freezing. 1+5=6
b) Write down the concept of chilling and super chilling. 4
10. a) Describe the enzymatic changes in fish. 5
b) Sketch the marketing channel of Hilsha fish. 5

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 1st Semester Final Examination, 2018
Course Title: Waste Management and Environmental Science
(Theory)
Course Code: WME-301

Full Marks: 35

Time: 2 hours

[Figures in the right margin indicate Full Marks. Answer any **3 (three) questions** from each section where **question no. 1 & 5 are compulsory**. Use separate answer scripts for each section. **Split answer is strongly discouraged.**]

SECTION-A

1. a) What do you understand by the term "Waste Management"? 01
b) Discuss about different types of wastes. 02
2. a) What are the waste materials released from Pineapple and Mango juice processing industries? 1.5+1.5=03
b) Discuss environmentally viable waste management system for fruit industries. 04
3. a) What are the sources of NO_x and SO_x formed from industrial operation? 1.5+1.5=03
b) Briefly discuss the mechanism of "Photochemical Smog" formation. 04
4. a) Draw a flow diagram of waste water treatment plant. 04
b) Discuss about the flow equalization and filtration systems in water treatment plant. 1.5+1.5=03

SECTION-B

5. a) Elaborate the following terms: 0.25x8=02
DO, COD, TDS, TSS, BOD, SPM, PAN, GHG
b) Write down the methods and equipment used in waste water treatment. 01+01=02
6. a) What do you mean by "Eutrophication"? What are the effects and how can these be prevented? 1+2+2=05
b) What does the term 'Reduce', 'Reuse' and 'Recycle' used in environmental system mean? 02
7. a) What is acid rain? Briefly discuss about "London Smog" and its consequences to the environment. 1+2+2=05
b) Write down the sources of particulate matters in air. 02
8. a) How can you utilize solid residues from fibrous and non-fibrous materials? 1.5+1.5=03
b) What do you mean by EMP? Write the objectives of EMP and how EMP can be managed. 1+1.5+1.5=04