

Chattogram Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 1st Semester Final Examination, 2022
Subject: Oil and Fat Technology (Theory)
Course Code: OFT-301(T)

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 answers are strongly discouraged. Fractions of the questions must be answered together.)

Section-A

1. How does trans fatty acid cause coronary heart diseases in human body? 2
2.
 - a) Define malaxation. 1
 - b) Design a flow diagram of the virgin olive oil production process. 2
 - c) List the role of triglyceride in the human body. 2
3.
 - a) Define essential oil and fatty oil with example. 1
 - b) Draw the flow chart of fatty oil extraction process from seed. 2
 - c) Explain different methods of oil extraction process from seed. 2
4.
 - a) How do you measure the saponification value of soybean oil? 2
 - b) Enumerate the working principles of iodine value and peroxide value determination test. 3
5.
 - a) List the general steps of palm oil refining. 1
 - b) Illustrate the chemistry of hydrogenation process. 2
 - c) Briefly explain different types of rancidity of oil. 2

Section-B

6. Draw the following structures: 3
 - a) Triglyceride
 - b) Omega-3 fatty acid
 - c) Trans fatty acid
 - d) Oleic acid
 - e) Diglyceride
 - f) Lipid radical
7.
 - a) Define degumming. 1
 - b) Elaborate different methods of degumming process of palm oil. 4
8.
 - a) Explain the bleaching process of palm oil. 1
 - b) Draw the mechanisms of homogeneous and heterogeneous catalysts in the hydrogenation reaction of oil. 4
9.
 - a) Differentiate between drying and non-drying oil. 2
 - b) Briefly explain the minor elements of crude oil 3
10. Write short notes on:
 - a) Rendering. 2
 - b) Winterization. 1
 - c) Fortification of oil. 2

Chattogram Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 1st Semester Final Examination, 2022
Subject: Waste Management and Environmental Science (Theory)
Course Code: WME-301(T)

Full Marks: 35

Time: 2 hours

(Figures in the right margin indicate full marks. Answer any 04 (four) questions from each section, where 1 and 6 are compulsory. Use separate answer script for each section. Split answers are strongly discouraged. Fractions of the questions must be answered together.)

Section-A

1. a) Outline the sources of particulates in air. 1
b) How sulfur oxides and nitrogen oxides can spread to air and cause air pollution? 1
2. a) Why activated sludge treatment process is used widely in waste water treatment plants? 2
b) Sketch and explain the flow diagram of an activated sludge process. 3
3. a) What is acid rain? How is it formed? What are the causes of acid rain? Mention the ecological effect of acid rain. 3
b) "Bhopal gas tragedy: a continuing disaster" Justify the statement. 2
4. a) Briefly describe the stages of anaerobic digestion system (AD). 3
b) What are the effects of time, temperature, C:N ratio and dilution in AD? 2
5. a) Write down the indicator of indoor air quality assessment. 2
b) What is Environmental impact assessment (EIA)? Write down the important steps in the EIA process. 1+2=3

Section-B

6. a) Enlist the quality parameters of waste water. 1
b) How colloidal particles of waste water can be removed? 2
7. a) What do you know about eutrophication? Discuss it's process and the consequences. 1+1=2
b) Discuss in detail about the conventional processes of solid waste management. 3
8. a) What processes are used for the removal of bacteria and viruses from waste water? Also specify the reaction mechanisms of these processes. 1+1=2
b) Does a secondary and tertiary treatment option can control the organic loads of food industries? If yes, then justify your opinion. 3
9. a) How photochemical smog is formed? 2
b) Why gravitational settling chambers and bag houses are used in particulate matters removal? Briefly describe their mechanism of action. 1+2=3
10. a) Why coagulation and flocculation processes are involved in ETP plants? 2
b) Briefly describe the sedimentation and filtration operations principle in ETP plants. 3

Chattogram Veterinary and Animal Sciences University
Faculty of Food Science & Technology
BFST 3rd year 1st Semester Final Examination, 2022
Course Title: Market Milk Processing Technology (Theory)
Course Code: MMP- 301 (T)

Full Marks: 35

Time: 2 Hours

(Figures in the right margin indicate full marks. Answer any three (3) questions from each section where question number 1 is compulsory. Use separate answer script for each section. Fractions of the questions must be answered together.)

SECTION-A

1. a) Distinguish between milk and colostrum. 2.0
b) State the manufacturing procedure of flavored milk and reconstituted milk. 3.0
2. a) Write down the food value of milk. 3.0
b) Write how you will produce hygienic milk concerning public health issues. 3.0
3. a) What is standardization? Show the BSTI standard of different ingredients and microbial population for market milk. 1+3 = 4.0
b) Enlist the factors those are affecting the quality of market milk. 2.0
4. a) What is pasteurization of milk? State the merits and demerits of different types of pasteurization. 1+3= 4.0
b) List the requirements of high grade milk. 2.0

SECTION-B

5. a) What are the differences between milk and market milk? Mention the detail composition of milk. 1.5+1.5 =3.0
b) Discuss the history of dairy development in Bangladesh. 3.0
6. a) How many kg each of 36% cream and 3.1% milk will be required to make 300000 liters of a mixture with 1.030 specific gravity testing BSTI recommended fat% for market milk? 3.0
b) What are protocols should you follow for receiving milk in a chilling plant? 3.0
7. a) What are the types of milk chillers and advantages of each type? 3.0
b) How will you perform CIP of a commercial milk chiller? 3.0
8. a) What are the methods of pricing milk? Which one is more accepted to you and why? 3.0
b) Discuss the chemical properties of milk. 3.0

Chattogram Veterinary and Animal Sciences University

Faculty of Food Science & Technology

BFST 3rd year 1st Semester Final Examination, 2022

Course Title: Fish Processing Technology (Theory)

Course Code: FPT- 301 (T)

Full Marks: 70

Time: 3 Hours

(Figures in the right margin indicate full marks. Answer four (4) questions from each section where question number 1 and 6 are compulsory. Use a separate answer script for each section. Fractions of the questions must be answered together.)

SECTION-A

1. Give an overview of the objective and benefits of fish processing. 5
2. a) What do you mean by Bio factors/ Health factors? Give a brief description of the roles of different bio-factors found in fish. 1+5=6
b) List out and briefly describe the fish processing techniques of the world. 4
3. a) Enumerate the necessity of fish processing in Bangladesh. 6
b) Differentiate between white and dark muscle. Mention the function of muscular tissue. 2+2=4
4. a) What are the changes that occur in fish after death? Shortly describe the enzymatic changes in postmortem condition. 2+3=5
b) Define rigor-mortis. Illustrate the biochemical changes that occur in fish during rigor mortis. 5
5. a) Describe in detail the technical problems associated with the canned fishery products. 6
b) List out the difference between radiation pasteurization and radiation sterilization. 4

SECTION-B

6. What are the main sources of ionizing radiation that are commonly employed in the fish preservation process? How Irradiation process is used to preserve the fish? 2+3=5
7. a) Summarize the novel techniques to control the beetles and mites in dried fish. 5
b) Describe the features which lead to deterioration in the quality of fish during marketing. 5
8. a) Explain the basic methods of collecting and concentrating the sun's energy in the fish drying process. 4
b) Give a brief list of the improvement of traditional sun-drying fish preservation methods in Bangladesh. 6
9. a) How does fish freeze? Briefly describe the factors that affect the freezing time of fish. 3+4=7
b) Shortly describe the principle of the curing process with their preserving action. 3
10. a) List out and shortly describe the features and types of salting. How salting preserves fish? 5+2=7
b) Discuss the following process terms: radurization, radication and radappertisation. 3

Chattogram Veterinary and Animal Sciences University
Faculty of Food Science & Technology
BFST 3rd year 1st Semester Final Examination, 2022
Course Title: Clinical Nutrition
Course Code: CLN- 301 (T)

Full Marks: 35

Time: 2 Hours

(Figures in the right margin indicate full marks. Answer **four (4)** questions from each section where question number **1 and 6** are compulsory. Use separate answer script for each section. Fractions of the questions must be answered together.)

SECTION-A

- | | | |
|----|---|--------|
| 1. | What is malnutrition? List out the major nutritional problems in Bangladesh. | 1+2=03 |
| 2. | a) Differentiate between gastritis and ulcer. | 02 |
| | b) Define gout. Explain the risk factors of gout. | 1+2=03 |
| 3. | a) What are the causes of lactose intolerance? | 02 |
| | b) Interpret how protein pump inhibitors (PPI) work in the human body. | 03 |
| 4. | a) What types of food should be avoided for gouty patients? | 01 |
| | b) Describe the lifestyle changes and dietary modifications to prevent inflammatory bowel diseases. | 04 |
| 5. | a) What are the common symptoms of dyspepsia? | 02 |
| | b) Briefly describe the “Trans-theoretical Model” of behaviour change. | 03 |

SECTION-B

- | | | |
|-----|---|----------|
| 6. | What is the difference between clinical nutritionist and dietitian? | 02 |
| 7. | a) What is infection? | 01 |
| | b) Categorize different types of diarrhea. How will you control a diarrhea patient? | 02+02=04 |
| 8. | a) Mention the risk factors of ASD (Autism Spectrum Disorder). | 02 |
| | b) Illustrate the pathophysiology of rheumatoid arthritis. | 03 |
| 9. | a) List out the sign and symptoms of Crohn’s disease. | 02 |
| | b) Define celiac disease. What are the risk factors of celiac disease? | 01+02=03 |
| 10. | a) Delineate the clinical sign and symptoms of autism spectrum disorder. | 02 |
| | b) Classify allergy. How can you detect food allergies? | 01+02=03 |

Chattogram Veterinary and Animal Sciences University
Faculty of Food Science & Technology
BFST 3rd year 1st Semester Final Examination, 2022
Course Title: Food Bio-Technology (Theory)
Course Code: FBT- 301 (T)

Full Marks: 70

Time: 3 Hours

(Figures in the right margin indicate full marks. Answer four (4) questions from each section where question number 1 and 6 are compulsory. Use a separate answer script for each section. Fractions of the questions must be answered together.)

SECTION-A

- | | | |
|----|--|-------|
| 1. | Give an overview of biotechnology in food production and processing | 5 |
| 2. | a) Categorize foods according to modern biotechnology. Briefly describe the phases of transcription and translation. | 2+4=6 |
| | b) Enumerate the process of genetic engineering in recombinant DNA. | 4 |
| 3. | a) Which techniques can be used to purify nucleic acids from a cell lysate? | 5 |
| | b) How does DNA replicate and why? | 5 |
| 4. | a) How PCR works step by step? What does Taq polymerase do in PCR? | 2+3=5 |
| | b) What do you mean by gel electrophoresis and southern blotting? Briefly describe the modification of restriction fragments ends. | 1+4=5 |
| 5. | a) What is biological gene transfer? How does a gene transfer from one organism to another through biological mode? | 1+3=4 |
| | b) What is meant by sticky and blunt ends of DNA? Draw a schematic structure of the most widely used cloning vector in genetic engineering techniques. | 2+4=6 |

SECTION-B

- | | | |
|-----|--|---------|
| 6. | What is biotechnology in food fermentation? | 5 |
| 7. | a) What is the structure of the Ti plasmid? Which region is responsible for tumour induction in Ti plasmids? Write down the functions of virulence region in Ti plasmid? | 1+2+3=6 |
| | b) What is the mechanism of natural gene transfer by Agrobacterium? | 4 |
| 8. | a) Give short notes on the following: i. Macro injection and micro-injection, ii. Liposome mediated gene transfer, iii. Calcium phosphate mediated gene transfer, iv. Electroporation and electrofusion, v. Callus and cell suspension culture | 5x2=10 |
| 9. | a) What is the importance of tissue culture in food biotechnology? Define totipotency. Write down the principle of tissue culture. | 2+2+2=6 |
| | b) What is the regeneration process in explants? Describe the ways of regeneration in tissue culture. | 2+2=4 |
| 10. | a) Briefly describe the steps which are involved in micro-propagation. Which culture technique is most widely used for the generation of virus free plants and why? | 2+3=5 |
| | b) What do you mean by protoplast culture and somatic hybridization? Briefly describe the procedure of protoplast fusion. | 2+3=5 |

Chattogram Veterinary and Animal Sciences University
Faculty of Food Science & Technology
BFST 3rd year 1st Semester Final Examination, 2022
Course Title: Fish and Sea Food Technology (Theory)
Course Code: FSF- 301 (T)

Full Marks: 70

Time: 3 Hours

(Figures in the right margin indicate full marks. Answer four (4) questions from each section where question number 1 and 6 are compulsory. Use separate answer script for each section. Fractions of the questions must be answered together.)

SECTION-A

1. What is the difference between demersal and pelagic? How are gastropods different from bivalves? 2+3=5
2. a) State the importance and major roles of fish lipids in the human body. Compare between terrestrial and marine animals. 2.5+2.5=5
 b) How does seafood affect thyroid? Why omega-3 fatty acids are good for us? 2+3=5
3. a) What is cormorant fishing and flounder tramping? Briefly describe the modern technology used in fishing. 2+4=6
 b) What is onboard handling? Describe the good handling practices on board fishing vessel. 2+2=4
4. a) Mention the reasons for rigor mortis: Does it have any effect on food preservation? -explain. 5
 b) How can we prevent and control Salmonella in fish and fishery products? 5
5. a) Classify marine toxin. Briefly describe the marine phytotoxins. 2+3=5
 b) What do you mean by glazing and freezer burn? Which freezer is commercially used in the preservation of fish and shrimp in Bangladesh? -briefly describe it. 2+3=5

SECTION-B

6. Give short notes on the followings: i. MAP, ii. HPP, iii. SSD, IV. IMTA, and ISSCAP. 5x1=5
7. a) Give a brief description on any two of the followings: i) Sign of spoilage of salted fish, ii) Salted/ salt-free dried fish, iii) Pesticide used/ pesticide-free dried fish. 2x2=4
 b) Briefly describe the procedure of brining and pickle curing of preserving fish. 6
8. a) What is the working principle of solar dryer? Write down the process at a glance for drying of fish in solar dryer. 2+3=5
 b) How fish is smoked? Briefly describe the properties and functions of wood smoke. 2+3=5
9. a) Classify marinades. Briefly describe the preparation of cold marinades using herring. 2+3=5
 b) Write down the role of cryoprotectants in surimi. How surimi is prepared from white muscle fish? 2+3=5
10. a) How many groups of algae are cultivated for food? Enlist the seaweed based products? 2+2=4
 b) What is agar and how is it made? 6

Chattogram Veterinary and Animal Sciences University
Faculty of Food Science & Technology
BFST 3rd year 1st Semester Final Examination, 2022
Course Title: 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 four (4) questions from each section where question number 1 and 6 are compulsory. Use a separate answer script for each section. Fractions of the questions must be answered together.)

SECTION-A

1. State the basic difference between fruits and vegetables. Classify vegetables. 2+3=5

2. a) What do you mean by parthenocarpic fruit? Why apple is called false fruit? 2+2=4
 b) What causes green vegetables to lose their color on heating? Why do red vegetables and fruits shift toward violet and gray-blue? 2+4=6

3. a) Why is post-harvest physiology important in fruits and vegetables? What is the difference between climacteric and non-climacteric fruits in term of respiration rate? 2+2=4
 b) What is the importance of maturity indices? Describe the physical methods of judging maturity in horticultural produce. How do you calculate degree days? 2+2=2=6

4. a) What do you mean by post-harvest chemical treatment? How is ethylene produced in fruits? Enlist the name of commercial waxes. 2+2+2=6
 b) Why precooling is necessary for fruits and vegetables? Briefly describe the different methods of pre-cooling of fruits and vegetables. 2+2=4

5. a) What are the changes being occurred in fruits and vegetable during ripening? 4
 b) Briefly describe the factors that are responsible for the deterioration of horticultural produce. 6

SECTION-B

6. Define the following terms: i. Syruping, ii. Brining, iii. Reconstitution ratio, iv. Rehydration coefficient, v. Percent (%) of water in the rehydrated material. 5x1=5

7. a) Give a brief description on any two of the followings: i) Functions of exhaustion during canning, ii) Principle of freeze dryer, iii) Spoilage of canned foods. 2x2.5=5
 b) Why freezing is superior to any other preservation practices? Enumerate the changes in fruits and vegetables during freezing. 2+3=5

8. a) Why blanching treatment is applied prior to freezing and canning? Briefly describe the different methods of clarification. 2+3=5
 b) What do you mean by synthetic and energy drink? Draw the technological flow sheet for the manufacturing process of cider. 2+3=5

9. a) What do you mean by grain strength, malt vinegar, and spirit vinegar? Give an overview of vinegar production from molasses. 2+3=5

- b) What are the factors that influence the precipitation of pectin? Describe the Olsens theory of jelly formation. 2+3=5
10. a) Which ingredients are essential for the quality of the jelly? Describe them briefly. How the end point of boiling is judged in the preparation of jelly? How do you prevent syneresis in jelly? 2+2+2=6
- b) What are the differences between pickle and chutney? Give a processing flow-sheet for mushroom dehydration. 2+2=4

Chattogram Veterinary and Animal Sciences University
Faculty of Food Science & Technology
BFST 3rd year 1st Semester Final Examination, 2022
Course Title: Computer Application in Food Technology (Theory)
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. Fractions of the questions must be answered together.)

SECTION-A

1. a) State whether the following statements are true or false. 5
 - i) *main()* is where the program begins its execution.
 - ii) In C language, lower case letters are significant.
 - iii) A *scanf()* function can be used to read only one value at a time.
 - iv) The keyword *void* is a data type in C.
 - v) Individual words and punctuation marks are called tokens.
- b) Describe the structure of C program. 2

2. a) Define identifier. Write down the rules of using an identifier. 1+1=2
- b) Write a C program to calculate the roots of the following quadratic equation: 5

$$ax^2 + bx + c = 0$$

3. a) Determine the value of each of the following logical expressions 4

if $i = 10, j = 20, k = 30, x = 40,$ and $y = 50$

 - i) $2 * ((i+j) / (k * i/j) \% (i/2))$
 - ii) $(i * j * 5) \% (k * j - 10) \% (x + y - 50)$
 - iii) $(x > y) \&\&! (i < 5) \|\ (j >= 10)$
 - iv) $(float) ((int) 75.5 / 10 \% (int) 5.6)$
- b) Compare the use of the if-else statement with the use of the ?: operator. In particular, in what way the ?: operator be used in place of an if-else statement? 3

4. a) What is the data type in C? Write down the name and describe the four fundamental data types in C with its qualifiers. 1+4=5
- b) What are the differences between ++a and a++? 2

5. a) What is a variable and what is meant by the "value" of a variable? 2
- b) Suppose a, b, c are integer variables where a = 8, b = 3, and c = -5. Determine value of each of the following arithmetic expressions: (i) a/b (ii) b% a-c (iii) c% b*a (iv) 2*b+3*(a-c) (v) 7%3*3 5

6. a) What is an array? In what way an array differ from an ordinary variable? How can we declare a two dimension array? 1+1+1=3
- b) What do you mean by a function? What are the advantages of using functions? 1+3=4

SECTION-B

7. a) Write a C program that compute the sum of the digit of a given integer number. 4
- b) What is looping? Change the following for loop to do while loop: 3

```

for (x = 1; x <= n; x = x+1)
{
    if (x%5 == 0)
        printf ("%d \n", x);
}
printf ("End of the program.");

```

8. a) Write a C program to find all the integer numbers greater than 100 and less than 800 that are divisible by 3. 5
 b) Why comment is used and where it can be placed? 2
9. a) Explain if and if-else statement with example. 3
 b) Write a program to determine whether a given number is “odd” or “even” and print the message NUMBER IS EVEN or NUMBER IS ODD. 4
10. a) Write a C program that will print the following series using loop: 4

$$\frac{1}{1} + \frac{1}{3} + \frac{1}{5} + \frac{1}{7} + \dots + \frac{1}{99}$$

 b) Assume that the value of the strings, string1 and string2 are
 string1 = “Computer Application in Food”
 string2 = “ & Technology”
 Now what will be the output of the following string operations:
 (i) strlen (string2)
 (ii) strcat (string1, string2)
 (iii) strcpy (string1, string2) 3
11. a) Compare do-while and while loop in terms of their function. Give appropriate example of each of the statement. 3+2=5
 b) What are the differences between getchar () and scanf ()? 2
12. a) Find errors if any in the following function definitions and rewrite it: 2.5+2.5 =5
 (i) void exchange (int x, int y)
 {
 int c;
 c = x;
 x = y;
 y = c;

 return (y);
 }
 (ii) int sum (int x, int y)
 {
 float z;
 z = x+y;
 return (x);
 }
- b) Explain how null characters help in string manipulation? 2