

**Chittagong Veterinary and Animal Sciences University**  
**Faculty of Food Science and Technology**  
**BFST 3<sup>rd</sup> year 1<sup>st</sup> Semester Final Examination 2021**  
**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 answer is strongly discouraged.)

**Section-A**

1. Draw the following structures- 2
  - a) Diglyceride.
  - b) Omega-6 fatty acid.
  - c) Oleic acid.
  - d) DHA
  
2.
  - a) What do you mean by degumming? 1
  - b) Elaborate the chemical degumming process of oil. 4
  
3.
  - a) Define bleaching of vegetable oil. 1
  - b) Explain the bleaching system of palm oil. 2
  - c) What are the purposes of finding acid number of vegetable oil? 2
  
4.
  - a) Define acid value and free fatty acid value. 1
  - b) Explain the working principles of iodine value and peroxide value determination test. 4
  
5.
  - a) Write down the general mechanism of deep frying. 2
  - b) Describe the changes and reactions occurred during frying of food in oil and fat. 3

**Section-B**

6.
  - a) Why plant oil is better than animal fat? 2
  - b) What are the cause of oxidation of oil and fat? 1
  
7.
  - a) Define deodorization. 1
  - b) Differentiate between soft and hard margarine. 1
  - c) Construct the chemistry of hydrogenation. 3
  
8.
  - a) What do you mean by fractionation of oil? 1
  - b) Briefly discuss the neutralization process of oil. 4
  
9.
  - a) Differentiate between drying and non-drying oil. 2
  - b) Explain the minor elements of crude oil. 3
  
10.
  - a) What is refining of vegetable oil? 1
  - b) Design and explain the palm oil production process. 4

**Chittagong Veterinary and Animal Sciences University**  
**Faculty of Food Science and Technology**  
**BFST 3<sup>rd</sup> year 1<sup>st</sup> Semester Final Examination 2021**  
**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 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. a) What are the effects of acid rain on the ecosystem? 1  
b) What is solid waste incineration process? 1
2. a) What quality parameters are considered for drinking water purpose? 2  
b) Discuss in detail about zeolite process. 3
3. a) What are Green house gases (GHGs)? 2  
b) How green house gases contribute to global warming and climate change? 3
4. a) Sketch the flow diagram of the waste water treatment plant. 3  
b) Write down the characteristics of waste water of textile dyes. What are the major constituents of synthetic effluents during textile manufacturing? 2
5. a) What do you know about Bhopal disaster and its impacts? 3  
b) Write a brief note about London Smog. 2

**Section-B**

6. a) How photochemical smog are formed? 2  
b) What are the harmful effects of photochemical smog? 1
7. a) Define BOD and COD of water. Why COD values are greater than BOD? 2  
b) What basic factors should be addressed during the preparation of the EIA and EMP report? 3
8. a) Discuss briefly about landfill, recycle and reuse options for solid waste management. 3  
b) How SO<sub>x</sub> and NO<sub>x</sub> can cause pollution. 2
9. a) Why cyclone separator and electrostatic precipitators are widely used rather than gravitational filters? 2  
b) Discuss the ion-exchange process of water. Provide two major differences between ion-exchange and lime softening process. 3
10. a) Why biological treatment options are now preferred than chemical treatment. 2  
b) How environmental management plan can contribute in minimizing waste water pollution problems? 3

**Chattogram Veterinary and Animal Sciences University**  
**Faculty of Food Science and Technology**  
**BFST 3<sup>rd</sup> year 1<sup>st</sup> Semester Final Examination-2021**  
**Subject: Clinical Nutrition (Theory)**  
**Course Code: CLN-301**

**Full Marks: 35**

**Time: 2 hours**

(Figures in the right margin indicate full mark. Answer 4 (Four) questions from each section where question no. one (1) and six (6) are compulsory. Split answer is not allowed.)

**Section-A**

1. Differentiate between guidance and counselling. 3
2. a) What is proton pump inhibitor? 1  
b) Enlist the causes of gastritis and ulcer. 4
3. Define the following nutritional terms: 5
  - a) PEM
  - b) VADD
  - c) IDD
  - d) IDA
  - e) Hidden hunger
4. a) Distinguish between diarrhea and dehydration. 2  
b) How can you treat a diarrheal patient? 3
5. a) Define dyspepsia. 1  
b) Explain lifestyle changes and dietary modifications to prevent dyspepsia. 4

**Section-B**

6. "Malnutrition and infection are a vicious cycle"- explain with its main factors. 2
7. a) Illustrate the pathophysiology of food allergy. 3  
b) What is gout? What types of food should be avoided for a gouty patient? 2
8. a) Summarize the different types of counseling techniques. 3  
b) How can you prevent autism spectrum disorder? 2
9. a) List the symptoms of Inflammatory Bowel Syndrome (IBS). 2  
b) Outline the dietary and lifestyle modifications advice for an IBS patient. 3
10. a) Define lactose intolerance. 1  
b) Explain the mechanism of celiac disease. 4

**Chattogram Veterinary and Animal Sciences University**  
**Faculty of Food Science and Technology**  
**BFST 3<sup>rd</sup> year 1<sup>st</sup> Semester Final Examination, 2021**  
**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** questions from each section, where question no. **1 and 6 are compulsory**, Split answer is not allowed)

**Section-A**

1. a) Briefly explain the role of biotechnology in food Industry. 5
2. a) What is the first step of gene expression? Briefly describe the phases of transcription and translation. 6  
b) Briefly describe the uses of DNA in different technologies. 4
3. a) How nucleic acids are separated and purified from the cell lysates? 5  
b) How does DNA replicate? 5
4. a) Briefly describe the modification of restriction fragments ends. 5  
b) Which culture technique is most widely used for the generation of virus free plants and why? 5
5. a) What's the molecular mechanism undergoing Agrobacterium mediated transformation? 4  
b) Write down the characteristics of an ideal cloning vector. Draw a schematic structure of the most widely used cloning vector in genetic engineering technique. 6

**Section-B**

6. Define biotechnology and food biotechnology. Categorize foods which are produced through modern biotechnology. 5
7. a) Narrate the biological methods of gene transfer which are usually observed in microorganisms with labelled diagram. 6  
b) State the principles of tissue culture. What is meant by organogenesis? 4
8. a) What do you mean by PCR? Describe the principles and procedure of PCR? 5  
b) Differentiate among explant, germplasm, and propagules. Which culture technique is most widely utilized for haploid plant production? -Briefly describe it. 5
9. a) Briefly describe the steps that are involved in micro-propagation. What are the major advantages of producing plants by micro-propagation? 6  
b) Give a short description on somatic hybridization, somaclonal variation, electroporation, and electrofusion. 4
10. a) Elaborate the mechanism of different types of bioreactors which are based on the mode of operation. 5  
b) Enlist the different types of enzymes which are used on carbohydrate compounds and state their industrial application. 5

**Chattogram Veterinary and Animal Sciences University**  
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**BFST 3<sup>rd</sup> year 1<sup>st</sup> Semester Final Examination, 2021**  
**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** questions from each section, where question no. **1 and 6 are compulsory**, Split answer is not allowed)

**Section-A**

1. a) Write down the basic difference between fruits and vegetables. 3  
b) Classify vegetables. 2
2. a) Explain true and false fruits with example. 4  
b) How do fruits and vegetables get their colour? 6
3. a) Why post-harvest physiology is important in fruits and vegetables? Differentiate between climacteric and non-climacteric fruit in term of respiration rate. 6  
b) Describe the relative changes of important characteristics which occur during growth and maturation of fruits with diagrammatic representation. 4
4. a) Enumerate the importance of maturity indices? State the maturity indices for citrus fruits and avocado. 4  
b) Give an over view about the different methods of determination of harvest maturity indices. 6
5. a) Why blanching treatment is applied prior to freezing and canning? Which types of apples are selected for the preparation of cider? Briefly describe the different methods of clarification. 5  
b) Classify wine. Describe the manufacturing process of wine. 5

**Section-B**

6. How fumigation is helpful in controlling postharvest diseases of fruits? Write the advantages and disadvantages of waxing? 5
7. a) What is inversion of sugar? How the end point of boiling is judged in the preparation of jelly? Give a manufacturing flow diagram of tomato ketchup processing. 6  
b) Differentiate among nectar, cordial, and squash. Give the manufacturing flow diagram of squash. 4
8. a) State the role of ethylene in fruits. How ethylene is produced in fruits? 6  
b) Why precooling is necessary for fruits and vegetables after harvesting? Which method of precooling is commonly followed by a farmer? 4
9. a) Is there a difference among jam, jelly, and marmalade? Briefly describe the manufacturing process of jelly. 5  
b) What are the factors that influence the precipitation of pectin? What are the problems in jam making and mention their remedies? 5
10. a) Why freezing is superior to any other preservation practices? How does a freeze dryer work? 5  
b) What are the functions of exhaustion during canning? What are the causes of spoilage of canned foods? 5

**Chattogram Veterinary and Animal Sciences University**  
**Faculty of Food Science and Technology**  
**BFST 3<sup>rd</sup> year 1<sup>st</sup> Semester Final Examination, 2021**  
**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** questions from each section, where question no. **1 and 6 are compulsory**, Split answer is not allowed)

**Section-A**

1. a) Write down the principles of drying. Differentiate between drying and dehydration. 2+1=3  
b) Enlist the factors that influence the rate of fish drying. 2
2. a) Describe the main factors involved in spoilage of fish. 4  
b) Define bio-factors. Give a brief description on roles of different bio-factors found in fish. 1+5=6
3. a) Briefly describe the skeletal, cardiac and smooth muscle of fish with their functional significance. 5  
b) Distinguish between white and red muscles. 2.5  
c) Enlist the important types of sensory/organoleptic changes in fish after death. 2.5
4. a) Outline the features which lead to deterioration in qualities of fish during marketing. 5  
b) Discuss the two basic methods of collecting and concentrating the sun's energy in fish during drying process. 2  
c) Define Honey Combing. What are the main sources of ionizing radiation that are commonly employed in fish preservation process? 3
5. a) What are the differences between fresh fish and stale fish? 2  
b) Define fish processing. Write down the objectives and scope of fish processing. 1+3=4  
c) Distinguish between radiation sterilization and radiation pasteurization. 4

**Section-B**

6. Enumerate in brief the different quality deterioration of fish in marketing to preservation. 5
7. a) What do you mean by Rigor-mortis? Explain the biochemical changes in fish during rigor-mortis. 4  
b) Recognize the influencing factor, effects and remedies of rigor-mortis. 6
8. a) Give some possible measures to improve the existing marketing system in Bangladesh. 5  
b) Summarize the novel techniques to control the beetles and mites in dried fish. 5
9. a) Illustrate the struvite formation and sulphite blackening problems which are usually occur in the canned fishery products. 4  
b) How Irradiation process is used to preserve the fish? 3  
c) Write down the principles of canning. Why canning is considered as the best processing methods? 3
10. a) Give a brief list for fishery products, by products and cured products. 4  
b) Give a brief outline for the improvement of traditional sun drying fish preservation methods in Bangladesh. 6

**Chattogram Veterinary and Animal Sciences University**  
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**BFST 3<sup>rd</sup> year 1<sup>st</sup> Semester Final Examination, 2021**  
**Subject: 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 any **Four** questions from each section, where question no.1 and 6 are compulsory, Split answer is not allowed)

**Section-A**

1. What are the basic concepts of aquaculture, mari-culture, IMTA and ISSCAP? 5
2. a) State the major and minor compounds of sea food. Compare between terrestrial and marine animals. 5  
b) What lipids are found in fish? Why omega-3 fatty acids are good for us and which fish are good sources of omega-3 fatty acids? 5
3. a) Explain in brief the following terms: Pelagic, demersal, diadromous, gastropods, aquatic reptiles and mammals. 3  
b) Is it true that prawns are bad for human cholesterols levels and why? 3  
c) Does sea food have mercury? How does sea weed keep a vital role for the prevention of enlargement of thyroid gland? 4
4. a) How does spoilage occur in fish and how it can be prevented? 5  
b) Illustrate the changes occur in different stages of rigor mortis of fish? 5
5. a) What do you mean by fishing techniques? Briefly describe the modern technology used in fishing. 6  
b) How fish is handled in board? 4

**Section-B**

6. Give short notes on the following: i) MAP, ii) SSD, iii) HPP, iv) Shell fish, and v) Crustaceans. 5
7. a) Give a brief description on any two of the following: 4  
i) Dark muscle and white muscle,  
ii) Curing and chilling,  
iii) Good fat and bad fat.  
b) What are the roles of rigor-mortis in fish preservation? 6
8. a) What are the common marine toxins and describe the causes to produce marine toxins? 5  
b) Briefly describe the products derived from sea weed. 5
9. a) Classify marinades. Briefly describe the preparation of cooked marinades using mackerel. 5  
b) Categorize fermented products of fish with proper example. How will you prepare products in which the original fish are reduced to the form of a paste? 5
10. a) How does salt preserve fish? What are the signs of spoilage in salted and dried fish? 6  
b) Briefly describe the processing and preservation of crabs. 4

**Chattogram Veterinary and Animal Sciences University**  
**Faculty of Food Science and Technology**  
**BFST 3rd Year 1<sup>st</sup> Semester Final Examination, 2021**  
**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 section A and two (2) questions from section B, where question number one(1) is compulsory. Split answer is strongly discouraged.)

**Section-A**

- |    |    |   |     |
|----|----|---|-----|
| 1. | a) | What is acidophilus milk? Discuss the manufacturing process of acidophilus milk.                          | 4.0 |
|    | b) | Enlist the sources of contamination of milk.  | 2.0 |
| 2. | a) | Show the steps of processing, manufacturing, packaging and storage of pasteurized milk in a flow diagram. | 3.0 |
|    | b) | What are the adverse effects of certain metals in milk?   | 3.0 |
| 3. | a) | What is CIP? What are the factors that affect the success of the CIP system?                              | 4.0 |
|    | b) | Enlist the grades of milk.  | 2.0 |
| 4. | a) | What is Toned milk?   | 1.0 |
|    | b) | Discuss the manufacturing process of butter milk.   | 5.0 |

**Section B**

You are an employee of Bangladesh Milk Producer's Co-operative Union Limited (BMPCUL) and recently you have promoted as Deputy Manager(Processing) and transferred to the market milk processing unit of Mirpur factory, Dhaka. The marketing department of your organization has given a requisition of 250000 liters of HTST milk with 1.029 specific gravity for 10<sup>th</sup> Ramadan. You have available raw milk (3%fat) and cream (31%fat) in the factory for standardization. The quality control department of the factory has detected some minor defects in the finished products and recommended to rectify the defects from the subsequent batches of production.

Answer any two(2) questions from the following based on above mentioned scenario:

- |    |    |  |     |
|----|----|--|-----|
| 5. | a) | Show the BSTI standard of different ingredients and microbial population for market milk. Do you have any criticisms of BSTI standard for market milk?                 | 4.5 |
|    | b) | How many kg each of 31% cream and 3% milk will be needed to make 250000 liters of a mixture with 1.029 specific gravity testing BSTI recommended fat%?                 | 4.0 |
| 6. | a) | What are the different types of special market milk available in world market and how many of country origin special market milk are available in Bangladesh?          | 4.0 |
|    | b) | Mention the name of last addition of country origin special market milk in Bangladesh market. Briefly discuss the manufacturing procedure of that special market milk. | 4.5 |
| 7. | a) | Mention the common flavor defects, causes and prevention of market milk.   | 4.0 |
|    | b) | Discuss the manufacturing procedure of chocolate milk.   | 4.5 |