

Chattogram Veterinary and Animal Sciences University
Department of Applied Chemistry and Chemical Technology
M.S. in Food Chemistry & Quality Assurance (January-June, 2021)
Course Title: Waste Management in Food Industry
Course Code: WMI- 501

Total Marks: 40

Time: 2 hours

Answer any four (04) questions. Figures in the right margin indicate full marks.

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| 1 | a. Design and explain ETP for the food industry. | 07 |
| | b. How does ETP play an important role in the food industry? | 03 |
| 2 | a. Elaborate on the origin and general characteristics of biodegradable by-products. | 06 |
| | b. How do you manufacture industrial pectin? | 04 |
| 3 | a. How does chain management help to minimize waste in the food industry? | 05 |
| | b. Discuss different key reasons to minimize waste in the food industry. | 05 |
| 4 | a. Illustrate different types of dewatering methods. | 07 |
| | b. Differentiate the following terms: by-product, co-product, and waste materials. | 03 |
| 5 | a. Classify different types of wastewater treatment processes with example. | 06 |
| | b. Briefly explain the mechanisms of coagulation and flocculation process. | 04 |

Chittagong Veterinary and Animal Sciences University
Department of Applied Chemistry and Chemical Technology
M.S. in Food Chemistry & Quality Assurance (January-June, 2021)
Subject: Food Additives
Course Code: FAD-501

Full Marks: 40

Time: 02 hours

[Figures in the right margin indicate full marks. Answer four (4) questions. Split answers are discouraged.]

1. a) What do you mean by food additives? Write in details about functions and benefits of food additives. 05
- b) Mention the risks of food additives. How can you categorize food additives? 05
2. a) What do you mean by browning? Describe the chemistry of browning reaction. 05
- b) Briefly discuss about Sulfites and Ascorbic acid as anti-browning agents. 05
3. a) Mention the uses of enzymes in the food industry. 04
- b) What is acidulants? List out the commonly used acidulants. Write down the microbial function and toxicology of Acetic acid. 06
4. a) Draw the structure: 05
 - i) β -Carotene
 - ii) γ -Tocopherol
 - iii) Ascorbic acid
 - iv) Saccharin (Sodium salt)
 - v) Mannitol
- b) Describe the chemistry and toxicology of Thaumatin and Sorbitol. 05
5. a) Describe the example of flavors of the type containing characterizing key chemicals. 04
- b) Write down the harmful side effects of artificial flavors. 03
- c) Write a short note on "Monascus pigments". 03

Chittagong Veterinary and Animal Sciences University
Department of Applied Chemistry and Chemical Technology
M.S. in Food Chemistry & Quality Assurance (January-June, 2021)
Subject: Food Quality Management
Course Code: FQM-501

Full Marks: 40

Time: 02 hours

[Figures in the right margin indicate full marks. Answer four (4) questions. Split answers are discouraged.]

1. a) What do you mean by QC Cycle? Write in details about the responsibilities of QC department. 05
- b) Mention the functions of QA department and difference between QC and QA. 05
2. a) Briefly describe the types and methods of food adulteration. 05
- b) Discuss about food adulteration in developing countries and their mitigation measures. 05
3. a) Draw a flowchart mentioning methods for determining quality. 03
- b) Describe the common chemical tests used for food products. 04
- c) Shortly explained about the environmental factor influencing the quality of food 03
4. Write short notes on: (Any two) 10
 - a) Sensory evaluation.
 - b) Auditing.
 - c) Deming cycle.
5. a) Write down the history of ISO 9000:2008. 05
- b) What are the key elements of quality in case of quality management system? Explain. 05

Chattogram Veterinary and Animal Sciences University
Department of Applied Chemistry and Chemical Technology
M.S. in Food Chemistry & Quality Assurance (January-June, 2021)
Subject: Food Analysis and Instrumentation
Course Code: FAI-501

Full Marks: 40

Time: 02 hours

[Figures in the right margin indicate full marks. Answer four (4) questions. Split answers are discouraged.]

1. a) Why we use UV-Visible spectrophotometer and Atomic Absorption Spectrophotometer 04
b) Discuss in detail about the Single Beam UV-Visible Spectrophotometer. 06
2. a) What is calibration curve? Why calibration and validation are necessary in UV-Visible analysis. 06
b) Discuss in detail about molecular orbital theory. 04
3. a) Why flame or furnace atomization of molecules are required for analysis in AAS instrument. 04
b) Describe the operation principle of AAS 06
4. a) What do you mean by Gas Chromatography, and Mass Spectrometry? 03
b) Enlist the factors that influence separation of components? 03
c) Write the principle of High Performance Liquid Chromatography. 04
5. a) Specify the factors that produce fewer peaks in IR spectrometry? 04
b) Note down the differences between IR and X-ray radiations. How these instrument are utilized in our everyday life. 06

Chattogram Veterinary and Animal Sciences University
Department of Applied Chemistry and Chemical Technology
M.S. in Food Chemistry & Quality Assurance (January-June, 2021)
Subject: Food Toxicology
Course Code: FTO-501

Full Marks: 40

Time: 02 hours

[Figures in the right margin indicate full marks. Answer four (4) questions. Split answers are discouraged.]

1. a) Define food toxicity. 02
- b) With the help of a flow chart describe the fate and effects of toxicants in human body. 04
- c) Why the knowledge of food toxicology is important in present world 04

2. a) Which heavy metals are considered as toxicants in food? Write a short note on chromium contamination. 05
- b) Describe about food adulteration in Bangladesh. 05

3. a) Describe the types of liver injuries by toxicants. 03
- b) Discuss different types of toxic response in respiratory system 03
- c) Evaluate bromobenzene as hepatotoxic agent. 04

4. a) Which factors increases the complexity of toxicants elimination process in human body? Explain 03
- b) Describe industrial lungs toxicants with their associated risks. 03
- c) Which are major routes of toxic elimination from human body? Describe hepatic elimination. 04

5. Define with examples: 10
 - i) Dose-response relationship
 - ii) Dose and threshold dose
 - iii) Selective toxicity
 - iv) Sensitive sub-population
 - v) Toxin and toxicants

Chattogram Veterinary and Animal Sciences University
Department of Applied Chemistry and Chemical Technology
M.S. in Food Chemistry & Quality Assurance (January-June, 2021)
Subject: Advanced Food Chemistry
Course Code: AFC-501

Full Marks: 40

Time: 02 hours

[Figures in the right margin indicate full marks. Answer four (4) questions. Split answers are discouraged.]

1. a) Discuss about different forms of water found in food. 05
b) What is water activity? Discuss about the role of water activity on shelf life of food. 05
2. a) What is carbohydrate? Mention different sources of carbohydrate. 05
b) Discuss non-enzymatic browning reaction. 05
3. a) What is protein? Classify protein based on their function. 05
b) Discuss about functional properties of protein. 05
4. a) Rewrite application of different enzymes in food processing. 05
b) What is rancidity? Discuss about different type of rancidity. 05
5. Write a short note on the following 10
 - i) Vitamin A
 - ii) Calcium (Ca).