

Chattogram Veterinary and Animal Sciences University
Department of Applied Chemistry and Chemical Technology
M.S. in Food Chemistry & Quality Assurance (January-June, 2019)
Course Title: 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) What is carbohydrate? Write down its classification and physical properties. 02+04
b) Discuss about gelling properties of pectin and its uses. 02+02

2. a) Write down the following reactions of protein 02X3=06
i) Reaction with alcohols
ii) Reaction with formaldehyde
iii) Reaction with nitrous acid
b) Write a short note on denaturation of protein. 04

3. a) Define rancidity. Elaborate different types of rancidity. 02+04
b) Differentiate between chemical and enzymatic interesterification methods. 02+02
Mention applications of interesterification method.

4. a) What is enzyme? Mention its properties. 02+02
b) Discuss about the role of enzyme on following industries: 02X3=06p
i) In beverage industries
ii) On meat products

5. a) Briefly discuss about enzymatic browning reaction. 5
b) Discuss about methods used to deter enzymatic browning reaction. 5

Chittagong Veterinary and Animal Sciences University
Department of Applied Chemistry and Chemical Technology
M.S. in Food Chemistry & Quality Assurance (January-June, 2019)
Course Title: Waste Management in Food Industry
Course Code: WMI-501

Full Marks: 40

Time: 02 hours

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

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| 1. a) | Design and explain ETP for food industry. | 08 |
| b) | Why do we use ETP? | 02 |
| 2. a) | How do you explain the principles of HACCP for dairy industry? | 08 |
| b) | Differentiate between ETP and STP. | 02 |
| 3. a) | How does chain management help to minimize wastes in food industry? | 05 |
| b) | Discuss different key reasons to minimize wastes in food industry. | 05 |
| 4. a) | Illustrate good housekeeping recommendations for different food industries to reduce wastes. | 07 |
| b) | Differentiate the following terms: by-product, co-product and waste materials. | 03 |
| 5. a) | Briefly explain the existing legislations on waste management in Bangladesh. | 05 |
| b) | Briefly explain the mechanisms of coagulation and flocculation process. | 05 |

Chattogram Veterinary and Animal Sciences University
Department of Applied Chemistry and Chemical Technology
M.S. in Food Chemistry & Quality Assurance (January-June, 2019)
Course Title: Food Additives
Course Code: FA – 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 and classify food additives. 05
b) Categorize the risk of food additives. 05

2. a) Illustrate the methods of food additives intake assessment. 05
b) Enlist the allergic reactions with their clinical and immunological features. 05

3. a) Discuss about the reactions in skin caused by food additives. 05
b) Categorize the tests for hypersensitivity reactions. 05

4. a) Enlist the functions of flavor enhancer in food. 03
b) Briefly discuss about the nutritive and non-nutritive sweetener. 07

5. a) State the mechanisms of stabilization by emulsifier. 04
b) Write down the uses and applications of food grade phosphates. 06

Chattogram Veterinary and Animal Sciences University
Department of Applied Chemistry and Chemical Technology
M.S. in Food Chemistry & Quality Assurance (January-June, 2019)
Course Title: 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) Define quality assurance. Briefly explain the programs of QA. 05
b) What kinds of statistical tools are used to analyse the QA system. 05

2. Describe the methods of data collection. 10

3. a) Define control charts. Write down the elements of control charts. 05
b) Short note on: 05
 - i. In control process.
 - ii. Out control process.

4. a) State the control charts for attributes. 05
b) How can you develop a product specification? 05

5. a) Define sensory evaluation. 02
b) Give brief discussion on methods of sensory evaluation. 08

Chattogram Veterinary and Animal Sciences University
Department of Applied Chemistry and Chemical Technology
M.S. in Food Chemistry & Quality Assurance (January-June, 2019)
Course Title: 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) State and explain Beers-Lamberts law. Derive the equation $A = \epsilon ct$ from Beers-Lamberts law. 06
- b) How can you differentiate between wave theory and quantum theory of light? 04
2. a) Briefly discuss about the types of electronic transitions. 05
- b) Discuss in detail about molecular orbital theory. 05
3. a) What are chromophores and auxochromes. How do they change the absorption maxima in organic molecules having π -electrons? 05
- b) Why were red shift and blue shift in frequency and wavelength found? Also discuss about the hypochromic and hyperchromic effect. 05
4. a) Write the principle of atomic absorption spectrometry. 05
- b) Why are samples required to digest in liquid form before analysis in atomic absorption spectrophotometer? 05
5. a) Why is flame or furnace atomization of molecules required for analysis in AAS instrument? 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, 2019)
Course Title: 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 toxicology. With the help of a flow chart describe the fate and effects of toxicants in human body. 02+04
- b) Evaluate the relationship between toxicology to other sciences. 04

2. a) Which heavy metals are considered as toxicants in food? Write a short note on Cr contamination. 02+03
- b) Briefly describe the present scenario of food contamination in Bangladesh 05

3. a) Which factors increase the complexity of toxicants elimination process in human body? Explain. 03
- b) Discuss the elimination process of toxicants through minor routes. 03
- c) Which are major routes of toxic elimination? Describe renal elimination. 04

4. a) Describe the types of liver injuries by toxicants. Evaluate bromobenzene as hepatotoxic agent. 03+03
- b) Which heavy metals are found as nephrotoxicants? Describe. 04

5. Define with examples: 2.5X4=10
 - i) Dose- response relationship
 - ii) Toxic symptoms and toxic effects
 - iii) Clinical and forensic toxicology
 - iv) Toxicants and toxin