

Chattogram Veterinary and Animal Sciences University
Department of Applied Chemistry and Chemical Technology
M.S. in Food Chemistry & Quality Assurance (January-June, 2023)
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) Write down the principle of UV-Visible spectrophotometer. 04
b) Discuss in detail about the double Beam UV-Visible Spectrophotometer. 06
2. a) State Beer's-Lamberts law. Derive the expression $A = \epsilon cl$ from this law. 06
b) How unknown concentration of a supplied sample can be analyzed by UV-visible spectrophotometer? 04
3. a) Write down the principle of atomic absorption spectrometry. 06
b) Why microwave digestion is necessary for AAS analysis? 04
4. a) Why HCl and HF are IR active, but Cl₂ and O₂ are not? 03
b) Briefly discuss about the rotational and vibrational energy in molecules. 04
c) Specify the factors that produce fewer peaks in IR spectrometry. 03
5. a) Why red shift and blue shift in frequency and wavelength were found? Also discuss about the hypochromic and hyperchromic effect. 06
b) Enlist the advantages of double beam spectrophotometer over single beam. 04

Chattogram Veterinary and Animal Sciences University
Department of Applied Chemistry and Chemical Technology
M.S. in Food Chemistry & Quality Assurance (January-June, 2023)
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) What is food chemistry? Discuss about its scope and importance. 05
b) What is water activity? Discuss about the role of water activity on shelf life of food. 05
2. a) What is carbohydrate? Enumerate its classification. 04
b) What are pectic substances? Rewrite its functional properties and uses. 06
3. a) What is protein? List down the functional properties of protein. 05
b) Discuss modification of protein during processing and storage and its implications. 05
4. a) What do you understand by the term flavor reversion? Write down role of lipid in flavor. 04
b) Why are modification of fats and oils done? Rewrite the hydrogenation process for modifying fats and oils. 06
5. Write a short note on the following 05+05
 - i) Vitamin
 - ii) Minerals

Chattogram Veterinary and Animal Sciences University
Department of Applied Chemistry and Chemical Technology
MS in Food Chemistry & Quality Assurance (January-June, 2023)
Course: 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) Briefly explain the types of food additives. 05
b) Make a table mentioning major characteristics of Niacin, Pyridoxine, Biotin, Pantothenic acid, Folic acid and Cobalamin. 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) Draw the structure 03
 - i) Tertiary butylhydroquinone
 - ii) Propyl gallate
 - iii) Butylated hydroxyanisole
b) Write down the chemistry, properties and safe use of BHA as an antioxidant. 05
c) List out the commonly used acidulants. 02
4. a) Draw the structure: 05
 - i) Acesulfame K
 - ii) Sodium Cyclamate
 - iii) Aspartame
 - iv) Saccharin (Sodium salt)
 - v) Mannitol
b) Describe the chemistry and toxicology of Xylitol and Sorbitol. 05
5. a) Describe the example of flavors of the type containing characterizing key chemicals. 03
b) Write down the harmful side effects of artificial flavors. 03
c) Briefly describe about the pigments from animal and insect sources. 04

Chattogram Veterinary and Animal Sciences University
Department of Applied Chemistry and Chemical Technology
MS in Food Chemistry & Quality Assurance (January-June, 2023)
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) Explain the absorption route of toxic substances in cells. 04
b) Discuss in detail about the principle of food toxicology. 06
2. a) How qualitative and quantitative analyses of food toxicants are performed? 07
b) Enlist the important factors which are considered for solvent selection. 03
3. a) Briefly discuss about protease and cholinesterase enzyme inhibitors. 07
b) What is the present scenario of food contamination in Bangladesh? 03
4. a) Explain the environmental toxicity problems caused by Polychlorinated biphenyls (PCBs). 05
b) Briefly discuss In-vivo absorption and metabolism of PCBs. 05
5. Write short notes on: 10
 - I. Saxitoxin
 - II. Ciguatoxin
 - III. Tetramine
 - IV. Cyanogenic Glycosides

Chattogram Veterinary and Animal Sciences University
MS in Food Chemistry and Quality Assurance
January- June Semester Final Examination-2023
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.
Split answers are discouraged.

1. a) Draw and explain ETP for bakery industry. 08
b) List the importance of 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) Briefly explain the methodology of QMRA. 05
b) Discuss different key reasons to minimize waste in food industry. 05
4. a) Illustrate good housekeeping recommendations for different food industries to reduce waste. 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) Explain different types of functional byproducts available in fruits and vegetables. 05

Chattogram Veterinary and Animal Sciences University
Department of Applied Chemistry and Chemical Technology
M.S. in Food Chemistry & Quality Assurance (January-June, 2023)
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. 04
- b) Draw a flow chart mentioning the methods for determining quality. 03
- c) Mention the general standards or recommendations for Codex Alimentarius. 03
2. a) Briefly describe the types and causes of food adulteration. 05
- b) Discuss about food adulteration in developing countries and their mitigation measures. 05
3. a) List out the advantages of auditing. 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. a) Explain the descriptive test for sensory analysis. 03
- b) Write down the uses of sensory analysis in food industries. 03
- c) Write short note on "Certification and Accreditation". 04
5. a) Write down the history and drawbacks of ISO 9000:2008. 05
- b) What are the key elements of quality in case of quality management system? Explain. 05