

Chittagong Veterinary and Animal Sciences University
Department of Applied Chemistry and Chemical Technology
M.S. in Food Chemistry & Quality Assurance (July-December, 2015)
Subject: Food Safety and Risk Analysis
Course Code: FSA-502

Full Marks: 40

Time: 02 hours

[Figures in the right margin indicate full marks. Answer four (4) questions. Split answer is not allowed.]

1. a) Write down the principles of risk analysis. Describe the conditions necessary for risk analysis. 6
b) Draw the pathway of communicating risk. 4
2. a) What do you mean by qualitative and quantitative risk analysis? 2
b) Figure out the steps of risk assessment process. 4
c) Discuss the characteristics of a good assessment. 4
3. a) Write short note on “food adulteration in Bangladesh”. 6
b) Discuss the roles of stakeholders in risk communication. 4
4. a) Define HACCP. 2
b) Discuss the applications of three principles of HACCP. 4
c) Draw a flow sheet of logic sequence for application of HACCP. 4
5. a) Discuss the importance and current challenges of food safety. 6
b) Write short note on “Modern Food Safety System and Risk Analysis”. 4

Chittagong Veterinary and Animal Sciences University
Department of Applied Chemistry and Chemical Technology
M.S. in Food Chemistry & Quality Assurance (July-December, 2015)
Subject: Product Development and Project Management
Course Code: PDM-502

Full Marks: 40

Time: 02 hours

[Figures in the right margin indicate full marks. Answer four (4) questions. Split answer is not allowed.]

1. a) What do you mean by the Stage-Gate innovation process? Describe all stages in a typical Stage-Gate model. 7
- b) State the merits of Stage-Gate process. 3

2. a) How can you summarize the main steps for using experimental design in new product development? 4
- b) Write four drivers of innovative products. 2
- c) Describe the areas for Optimization of processes & parameters. 4

3. a) What do you mean by “New”? Write the importance of “New”. 4
- b) Describe with all stages for market research in product development. 6

4. a) Define project management. Describe the five basic phases of project management. 5
- b) What do you mean by SWOT analysis? Briefly describe with example of SWOT analysis. 5

5. Write short notes on: (any two) 10
 - a) Project management methodologies
 - b) Role of the project manager
 - c) Stakeholder analysis

Chittagong Veterinary and Animal Sciences University
Department of Applied Chemistry and Chemical Technology
M.S. in Food Chemistry & Quality Assurance (July-December, 2015)
Subject: Food Quality Assurance
Course Code: FQA-502

Full Marks: 40

Time: 02 hours

[Figures in the right margin indicate full marks. Answer four (4) questions. Split answer is not allowed.]

1. a) What do you mean by Quality Management System? Discuss about Quality Assurance Program Plan. 4
- b) What is viscosity and consistency? Discuss different kind of defects that can happen to a product. 4
- c) Mention different types of textural characteristics. 2

2. a) Describe analytical methods used for sensory evaluation. 3
- b) Name some of the micro-analytical methods used for Quality Assurance and mention advantages and disadvantages associated with these methods. 3
- c) Discuss different methods used for the determination of insects in food containers. How extraneous matter contamination can be prevented? 4

3. a) What is GMP (Good Manufacturing Practice)? Discuss its importance and basic needs required by GMP. 4
- b) Draw the chart for Effluent Treatment Plant. 3
- c) What do you mean by Total Quality Management (TQM)? Discuss the principle of TQM. 3

4. a) What is Hazard Analysis and Critical Control Point (HACCP)? Discuss briefly the principles of HACCP. 5
- b) Discuss briefly about guidelines for effective implementation of HACCP. 5

5. a) What is Quality Assurance? Discuss principles of Quality Assurance. 4
- b) What is R & D? What are the activities that should be carried out by R & D. 4
- c) Discuss barriers associated in establishing food industry in Bangladesh. 2

Chittagong Veterinary and Animal Sciences University
Department of Applied Chemistry and Chemical Technology
M.S. in Food Chemistry & Quality Assurance (July-December, 2015)
Subject: Food Security
Course Code: FSE-502

Full Marks: 40

Time: 02 hours

[Figures in the right margin indicate full marks. Answer four (4) questions. Split answer is not allowed.]

1. a) Define food security. Discuss different dimensions of food security. 5
- b) What is IPC? Discuss briefly about objectives and components of IPC. 4
- c) Explain food insecurity cycle. 1

2. a) Discuss the importance of bio-energy for sustainable development. 4
- b) What do you mean by food bio-technology? Discuss briefly opportunities associated with food bio-technology. 6

3. a) Discuss approaches taken towards food security by the world. 5
- b) What do you understand by the word "Globalization"? Discuss about the challenges associated with food security. 4
- c) What are the solutions to food insecurity? 1

4. a) Compare between carbon and water foot print from methodological viewpoint. 6
- b) Discuss methodology of climate impact studies. 4

5. a) Discuss impact of climate change on food. 5
- b) Discuss food security in respect of Bangladesh. 5

Chittagong Veterinary and Animal Sciences University
Department of Applied Chemistry and Chemical Technology
M.S. in Food Chemistry & Quality Assurance (July-December, 2015)
Subject: Food Quality Control
Course Code: FQC-502

Full Marks: 40

Time: 02 hours

[Figures in the right margin indicate full marks. Answer four (4) questions. Split answer is not allowed.]

1. a) Define Food Quality Control. 2
- b) Write down the principles of Food Quality Control. 4
- c) What are the importances of Quality Control department in food industries? 4

2. a) What is ISO 9001? 2
- b) Write down the procedure manual of ISO 9001. 4
- c) Discuss about the elements of GLP. 4

3. a) Define GMP. Differentiate between GLP and GMP. 3
- b) Write down the ISO quality management principles and describe two of them. 5
- c) Briefly describe about microbial quality control. 2

4. a) What is Deming cycle? Explain Deming cycle by a schematic diagram. 3
- b) Illustrate four activities of Deming cycle. 4
- c) Write down the benefit of Deming cycle. 3

5. a) Write short note on “BSTI” and “WTO”. 4
- b) Write down the different ISO standards with their key words. 3
- c) What is the difference between ISO 9000:2000 and ISO 9000:2008? 3

Chittagong Veterinary and Animal Sciences University
Department of Applied Chemistry and Chemical Technology
M.S. in Food Chemistry & Quality Assurance (July-December, 2015)
Subject: Applied Engineering Chemistry
Course Code: AEC-502

Full Marks: 40

Time: 02 hours

[Figures in the right margin indicate full marks. Answer four (4) questions. Split answer is not allowed.]

1. a) What is Reynold's number? How head loss can be calculated from Darcy-Weisbach's & Colebrook-White equation? 6
b) Considering the basic factors for non-uniform flow, which flow (pipe/open channel) is suitable for Bangladesh? Justify your opinion. 4

2. a) Discuss about the basic principles of material balance equation. 3
b) An aqueous solution of sodium hydroxide contains 20% NaOH by mass. It is designed to produce an 8% NaOH solution by diluting a stream of 20% solution with a stream of pure water. 7
i) Calculate the ratios (g H₂O/g feed solution) & (g product solution/g feed solution)
ii) Determine feed rates of 20% solution & diluting water needed to produce 2310 lbs/min of 8% solution.

3. a) What is Cavitation? What are the main causes of cavitation & how we can prevent it? 5
b) Write the working principle of centrifugal pumps. What are the advantages of it? 5

4. a) What do you mean by shell & tube heat exchanger? Write the advantages of these types instead of plate type heat exchangers. 4
b) In a sugar plant 1000 tons of cane is crashed daily. The bagasse is 30% of the cane. The clear juice which is 90% on the basis of cane is heated from 15.5° C to 71.1° C before clarification utilizing steam at 100° C. Calculate the quantity of water that should be evaporated in the evaporator if it's concentration is raised from 15° Bx to 65° Bx in a triple effect evaporator. Juice entered the evaporator at 85°C and leaves at 101.7° C under a pressure of 0.68948 bar. What percentage of energy liberated by the burning of bagasse is utilized in the evaporator if the calorific value of bagasse is 6300 KJ/kg (assuming 50% excess air is used for combustion)? Calculate the heating surface required in a triple effect evaporator if the average evaporation rate is 40 kg/m²/hr. Also calculate the surface required to heat in the juice heaters (heat transfer co-efficient is 857.76 J/s/m²k & specific heat 3.747KJ/kg). 6

5. a) Discuss about the basic parameters of water quality. 3
b) Why disinfection process in water treatment are necessary? 3
c) Briefly discuss about filtration & clarification process for waste water treatment. 4