

UNIVERSITY OF RUHUNA– FACULTY OF AGRICULTURE

**Third Examination in B.Sc in Agricultural Resource Management and Technology
(ARMT)/ B.Sc in Agri. Business Management (ABM) (Part I)
September, 2019**

**Food Preservation and Processing Technology (FS-3101)
(Theory)**

Answer **five (05)** questions **including question no. 1**

Time: 3 hrs

1. a) Briefly describe the chemical spoilage of food. **(25 marks)**
b) Briefly explain how the cleaning methods used for food material are determined;
 i. by the nature of the product to be cleaned and **(12.5 Marks)**
 ii. by the type of contaminant to be removed **(12.5 Marks)**
c) Make a brief note on “Microbial spoilage of milk and milk products” **(25 marks)**
d) Briefly explain the 12 D concept used in the food industry in order to ensure the complete sterilization of a food product. **(25 marks)**

2. a) Describe the major principles of food preservation **(20 marks)**
b) Briefly describe the effects of sterilization on sensory and nutritive quality of food products. **(20 marks)**
c) Briefly describe the importance of following preservation techniques in food industry
 i. Blanching **(10 marks)**
 ii. Fermentation **(10 marks)**
d) Suppose that you have been recruited as the production executive of a reputed fruit processing factory. You have been given a batch of ripen mango, papaya, and pineapple. Briefly describe the methods that you can apply to extend the shelf life of the above fruits, while stating the expected shelf life of each product that you suggest. **(40 marks)**

3. a) i. State the basic technological objectives of dehydration for food preservation. **(10 marks)**
 ii. Giving examples list out the applications of dehydration in food industry. **(15 marks)**
b) i. Define the term ‘Freeze drying’. **(10 marks)**
 ii. Briefly explain how ordinary drying methods are differing from freeze drying. **(15 marks)**
c) Discuss the importance of raw material handling as a unit operation in food processing. **(20 marks)**
d) Imagine you are working for a food company. You have been requested to prepare a poster to aware newly recruited employers on unit operations that are being followed in producing a RTS drink. Prepare the poster including all the unit operations that are taken place in preparation of a RTS with using any preferred fruit/s. **(30 marks)**

4. a) Briefly explain the advantages of thermal food processing techniques. (10 marks)
b) Briefly explain the pasteurization process used in thermal food processing. (20 marks)
c) How can you determine the Slowest Heating Point or the Cold Point of a canned food using a Heat Penetration Study? (30 marks)
d) The process time of a canned food is 18 min. The targeted final microbial load is 10^{-3} CFU/g. If the D value is 3.5 min, calculate the initial load of microorganisms using the Thermal Death Rate (TDR) curve. Clearly mention all your assumptions. (40 marks)
5. Briefly discuss the following
- a) Preservation methods of raw milk (25 marks)
b) Microbial contamination of raw meat and its prevention (25 marks)
c) Factors affecting a selection of a good preservation method for animal source foods (25 marks)
d) Raw milk handling prior to processing under Sri Lankan conditions (25 marks)
6. Critically analyze the following statements. **State whether you agree or disagree with the statement**, and justify your answer with facts. (25 marks each)
- a) **'Under-blanching'** is not desirable in food industry.
b) The final quality of a food product could be altered due to processing.
c) Water activity is an important measure of perishability of a food product.
d) Controlling of the unit operations is vital in order to obtain a quality end product.