LS2IPHC500 Reg. No. | | | | | | | | |

St Aloysius (Deemed to be University)

Mangaluru

Semester I – P.G. Examination – M.Sc. Food Science and Technology

November - 2024

Food Chemistry

Time: 2 ½ hrs. **Max Marks: 60**

Note: Draw neat labeled diagrams/schematic sketches/structures wherever necessary.

I. Write short notes on any FIVE of the following. (5x3=15)

1. Name three commonly used sweeteners and give an example of each.
2. Describe what is meant by a colloidal system.
3. What is gelatinization in the context of starch?
4. Define carbohydrates and list reasons why they are important in the human diet.
5. Explain the process of acetylation in modifying fats.
6. What is the difference between saturated and unsaturated fatty acids?
7. Write a note on essential amino acids.
8. Explain the properties of fatty acids.

II. Write explanatory notes on any FIVE of the following: (5x5=25)

9. Explain the physico-chemical properties of carbohydrates.
10. Describe the phase transition of water from liquid to ice and explain the energy changes involved.
11. Discuss on the classification of amino acids.
12. Describe how denaturation affects the functional properties of proteins in food products.
13. Explain how water-soluble interactions affect the solubility of solutes in water. Provide examples.
14. Discuss the key factors that influence the Maillard reaction in foods.
15. Discuss the process of lipolysis and how it leads to the development of rancidity in fats and oils.
16. Discuss secondary and tertiary structure of proteins.

III. Answer any TWO of the following: (2 x10=20)

17. How does food chemistry contribute to the development of processed foods?
18. Explain the roles of different hydrocolloids such as xanthan gum, guar gum, carrageenan, aligns, pectin's and starch in food processing.
19. Analyze the processes of acetylation and interesterification and explain how they modify the functional properties of fats and oils in the food industry. Provide examples of food products that use these modified fats.
20. Discuss the classification, properties and functions of fatty acids and lipids in detail.

****

(2024 - Batch onwards)

LS2IPHC501 Reg No : | | | | | | | |

St Aloysius (Deemed to be University)
Mangaluru
Semester I – P.G. Examination – M.Sc. Food Science and Technology
November - 2024
Principles of Food Processing and Preservation

Time : 2½ Hours **Max. Marks : 60**

Note: Draw neat labeled diagrams/schematic sketches/structures wherever necessary.

I. Write short notes on any FIVE of the following. (5x3=15)

1. What is water activity? What are intermediate moisture food?
2. What is deep frying?
3. What are the advantages and limitations of sun drying?
4. List the names of microorganism that are of safety concern in foods.
5. What is the principle of hypobaric storage?
6. What is membrane filteration?
7. List the principles of hurdle technology.
8. Name three types of packaging materials designed for processed foods.

II. Write explanatory notes on any FIVE of the following (5x5=25)

9. Describe the changes that occur in food during dehydration.
10. What are the different types of freezers and state their principles?
11. Discuss the working mechanism and applications of ohmic heating in the food industry.
12. Differentiate between quick and slow freezing.
13. What are the effects of microbial spoilage on food quality and safety?
14. Discuss the advantages and limitations of ultrasound treatment in food processing.
15. Explain the principles of refrigeration and how it is used in food preservation.
16. Compare salting and smoking as food preservation methods.

III. Answer any TWO of the following: (2x10=20)

17. Describe the canning process as a method of food preservation, and discuss its principles and steps.
18. Discuss in detail the different types of dryers used in the food industry and their specific applications.
19. Discuss in detail about frozen food transportation.
20. Explain in detail about food irradiation.

****

(2024 - Batch onwards)

LS2IPHC502

Reg No : | | | | | | | | |

St Aloysius (Deemed to be University)
Mangaluru
Semester I – P.G. Examination – M.Sc. Food Science and Technology
November - 2024
Processing of Milk and Dairy Products

Time : 2 ½ Hours **Max. Marks : 60**

Note: Draw neat labeled diagrams/schematic sketches/structures wherever necessary.

I. Write short notes on any FIVE of the following. **(5x3=15)**

1. How did the Anand Pattern revolutionize India's dairy sector?
2. Write on COB test.
3. What is the purpose and objective of clarification and filtration of milk.
4. Give the tetra pack layers and their functions.
5. Explain the role of enzymes in the formation of cheese.
6. Give the nutritional composition of WMP
7. List the key ingredients used in butter spread formulation.
8. Write a note on flavoured milk.

II. Write explanatory notes on any FIVE of the following **(5x5=25)**

9. Write a note on Reverse osmosis in dairy industry and its applications.
10. Compare and contrast the techniques used in traditional churning of butter to modern mechanical butter-making processes.
11. Explain the manufacturing of CHEDDAR CHEESE.
12. Comment on standards for Milk and milk products.
13. Analyze the strengths of India as the largest milk producer in the world.
14. Explain continuous pasteurization and its type.
15. Discuss the defects in Ice-cream.
16. Describe the differences between synthetic milk and natural milk. Write a note on the ingredients used in synthetic milk preparation.

III. Answer any TWO of the following: **(2x10=20)**

17. Explain on the different types of milk while commenting on their nutritive value.
18. Explain the process of Homogenization of milk.
19. Comment on the nutritional composition of condensed and evaporated milk. Explain their manufacturing process.
20. Analyze the potential risks associated with inadequate hygiene in the dairy industry, comment on different cleaning agents

****

(2024 - Batch onwards)

LS2IPSC500

Reg No : | | | | | | | |

St Aloysius (Deemed to be University)

Mangaluru

Semester I – P.G. Examination – M.Sc. Food Science and Technology

November - 2024

Fruits and Vegetables Processing Technology

Time : 2 ½ Hours Max. Marks : 60

Note: Draw neat labeled diagrams/schematic sketches/structures wherever necessary.

I. Write short notes on any FIVE of the following. (5x3=15)

1. What are the physical and chemical indices used to determine the maturity of fruits?
2. Give the Global scenario of fruits and vegetables production.
3. Explain how the concentration of pectin affects the texture of jam and jelly.
4. Explain the role of sulfur dioxide in the dehydration of fruits.
5. Explain how carbon dioxide levels are manipulated in Controlled Atmosphere (CA) storage to extend the shelf life of fresh produce.
6. Differentiate between MAP and CAP.
7. What are the benefits of using chemical treatments in post-harvest handling?
8. Write a short note on value added products of mushroom.

II. Write explanatory notes on any FIVE of the following (5x5=25)

9. Discuss the methods used for extracting fibers from fruits and vegetables. How do these methods impact the quality and functional properties of the fibers?
10. Write a note on FPO, 1955.
11. Discuss different methods of juice extraction and their impact on juice quality.
12. Discuss the role of ethylene in the ripening of climacteric fruits and how ethylene management techniques are used in post-harvest processing.
13. Describe the different categories of vegetables with examples.
14. Explain the biochemical changes that occurs during the fruit ripening.
15. Analyze the impact of blanching as a pretreatment prior to various processing giving to fruits and vegetables.
16. Compare and contrast freeze drying and hot air drying in the fruit powder preparation.

III. Answer any TWO of the following: (2x10=20)

17. Compare the effectiveness of different edible coatings in extending the post-harvest life of fruits and vegetables. What factors should be considered when selecting a coating for specific fruits and vegetables?
18. Define Intermediate Moisture Foods (IMF). Explain the principles involved in reducing the water activity of foods while maintaining their palatability and shelf life.
19. Describe in detail the process of producing tomato ketchup and list the specifications and quality control measures.
20. Elaborate on Canning steps with an example.

****

(2024 - Batch onwards)

LS2IPSC501

Reg No : | | | | | | | |

St Aloysius (Deemed to be University)
Mangaluru
Semester I – P.G. Examination – M.Sc. Food Science and Technology
November - 2024
Waste Management and Environmental Sustainability

Time : 2 ½ Hours **Max. Marks : 60**

Note: Draw neat labeled diagrams/schematic sketches/structures wherever necessary.

I. Write short notes on any FIVE of the following. **(5x3=15)**

1. Define gaseous waste and give two examples of common gaseous pollutants from industries.
2. Define waste and list the sources of waste.
3. Define Zero Liquid Discharge (ZLD) and explain its primary objective.
4. What are the common types of waste produced by the food industry?
5. Explain what Membrane Bioreactor Technology (MBR) is in the context of wastewater treatment.
6. What methods are commonly used for measuring the organic content of water?
7. List two key functions of the Central Pollution Control Board in waste management.
8. What is Effluent Treatment?

II. Write explanatory notes on any FIVE of the following **(5x5=25)**

9. What is the function of State Pollution Control Boards (SPCBs), and how do they work in conjunction with the CPCB?
10. Analyze the impact of poor waste management practices on food safety and public health.
11. Discuss the role of the National Green Tribunal (NGT) in enhancing environmental protection in India. What are its key functions concerning waste management?
12. Describe the biological treatment processes used for treating food industry wastes, such as aerobic and anaerobic digestion.
13. Analyze how rapid urbanization in India has influenced waste generation trends compared to developed countries.
14. Discuss the physical, chemical and biological unit operations in waste water treatment, providing examples of each type.
15. Analyze how the extraction of lycopene from tomato peels can be beneficial for both the environment and human health.
16. Compare the approaches of the Basel Convention and the Kyoto Protocol in managing environmental challenges related to waste and emissions.

III. Answer any TWO of the following: **(2x10=20)**

17. Explain in detail deep well injection method of liquid waste disposal and write its merits and demerits.
18. Analyze the challenges faced by food processing industries in meeting the emission and discharge standards set by regulatory bodies like CPCB.
19. Evaluate the potential of utilizing food processing wastes for producing value-added products like pectin, antioxidants and food colorants.
20. Explain in detail about Primary, Secondary and Tertiary waste water treatment methods.

****