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**ST ALOYSIUS (DEEMED TO BE UNIVERSITY)****MANGALURU****SCHOOL OF LIFE SCIENCES  
(PG PROGRAMME)****Semester I – P.G. Examination – M.Sc. Food Science and Technology****October/ November - 2025****FOOD CHEMISTRY****Time: 2 ½ hrs.****Max Marks: 60****Note: Draw neat labelled diagrams/schematic sketches/structures wherever necessary.****I. Write short notes on any FIVE of the following. (5x2=10)**

1. Name three commonly used sweeteners in the food industry and give an example of each.
2. What are colloids?
3. Write the concept of retrogradation in starch-based systems.
4. What are the main sources of carbohydrates in the human diet?
5. What is flavour reversion, and which type of lipid is most susceptible to it?
6. List two physical properties of amino acids.

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**II. Write explanatory notes on any SIX of the following: (6x5=30)**

7. Explain how water-soluble interactions affect the solubility of solutes in water. Provide examples.
8. Explain about classification and purification of colloids.
9. Analyze how the physical properties of carbohydrates like solubility and sweetness vary across different types.
10. Compare the chemical and functional differences between trans fats and cis fats. Discuss the health implications of trans fat consumption.
11. Compare the chemical reactions of oxidation and hydrolysis of fatty acids, and discuss how they impact food quality.
12. Explain About Texturised protein and denaturation of protein
13. What are the biological value and net protein utilization (NPU) of proteins, and how are they measured? Discuss their significance in evaluating protein quality.

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

14. Explain in detail about classification and properties of carbohydrates.
15. Briefly describe classification and properties of fats.
16. Analyze the processes of acetylation and interesterification and explain how they modify the functional properties of fats and oils in the food industry. Give examples.

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**(PG PROGRAMME)**

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

**October/ November - 2025**

**Principles of Food Processing and Preservation**

**Time: 2 ½ hrs.**

**Max Marks: 60**

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

**I. Write short notes on any FIVE of the following. (5x2=10)**

1. Define D Value and F value.
2. What is shallow frying?
3. What are the advantages and limitations of sun drying?
4. What are the factors influencing drying process?
5. What is the principle of ohmic heating?
6. What is the principle of hypobaric storage?

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**II. Write explanatory notes on any SIX of the following: (6x5=30)**

7. Describe how thermal death time (TDT) is used to ensure food safety
8. What are the principles of food preservation?
9. Explain the drying curve and the stages of drying.
10. What are modified and controlled atmosphere storage?
11. Explain the stages of freezing curve.
12. How does microwave processing impact the quality of food?
13. What is Pulsed Electric Field (PEF) processing?

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

14. Analyze the principles of conventional preservation methods like pickling, salting, and smoking and their importance in modern
15. Compare dehydration and concentration in terms of their processes, advantages and challenges.
16. Discuss in detail about food Irradiation.

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**Semester I – P.G. Examination – M.Sc. Food Science and Technology  
October / November - 2025  
Processing of Milk and Dairy Products**

Time: 2 ½ hrs.

Max Marks: 60

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

**I. Write short notes on any FIVE of the following. (5x2=10)**

1. Write a note on dairy co-operative societies.
2. Define milk.
3. What is the purpose and objective of clarification and filtration of milk?
4. Write a note on homogenisation of milk. St Aloysius (Deemed to be University) LIBRARY  
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5. Discuss on instantized milk powder.
6. Define cream powder and its main uses in the dairy industry.

**II. Write explanatory notes on any SIX of the following: (6x5=30)**

7. Describe any four SWOT analysis components on Indian Dairy Industry.
8. Write a note on Rapid platform tests.
9. Write a note on Reverse osmosis in dairy industry.
10. Analyze the nutritional differences between whole milk and cream, and their impact on dietary choices.
11. How does the freezing process affect the microstructure of ice cream, and how does this impact its sensory characteristics?
12. Explain the manufacturing of whey protein concentrates.
13. How do cleaning agents differ from sanitizing agents in their purposes and applications in dairy plant sanitation?

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

14. Discuss on the physiochemical properties of milk and their importance in the dairy industry.
15. Explain the heat treatment in milk processing.
16. Explain manufacturing of condensed milk.

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(PG PROGRAMME)****Semester I – P.G. Examination – M.Sc. Food Science and Technology****October/ November - 2025****Fruits and Vegetables Processing Technology****Time: 2 ½ hrs.****Max Marks: 60****Note: Draw neat labelled diagrams/schematic sketches/structures wherever necessary.****I. Write short notes on any FIVE of the following. (5x2=10)**

1. What are the physical and chemical indices used to determine the maturity of fruits?
2. Give the scenario of fruits and vegetables production in India
3. How do fruit pulp and juice content affect the quality of Ready to Drink (RTD) products?
4. Describe the primary methods for extracting natural colorants from fruits and vegetables.
5. Define enzymatic browning.
6. What are the key objectives of peeling fruits and vegetables during processing?

**II. Write explanatory notes on any SIX of the following: (6x5=30)**

7. What are the major post-harvest treatments used to control fruit decay and extend freshness
8. Discuss different methods of juice extraction and their impact on juice quality.
9. Discuss the process of hot-fill bottling and its importance in ensuring the microbial safety of fruit juices.
10. With a neat flowchart explain the steps involved in canning of fruits and vegetables
11. How does blanching help in preserving the color and nutrient content of vegetables? Discuss the mechanism involved.
12. Describe the different categories of fruits with examples
13. Explain any two theories of gel formation.

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

14. 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?
15. Explain any five value added products of mushrooms.
16. Develop a flowchart outlining the sequence of pre-processing operations for a specific fruit or vegetable with justification describe how each contributes to the overall product quality.

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

**October/ November - 2025**

**Waste Management and Environmental Sustainability**

Time: 2 ½ hrs.

Max Marks: 60

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

**I. Write short notes on any FIVE of the following. (5x2=10)**

1. Define waste and list the sources of waste.
2. List two main contributors of waste from the food processing industry.
3. Define Zero Liquid Discharge (ZLD).
4. Write on any one role of Basel Convention.
5. What is byproduct utilization?
6. List two examples of food industry byproducts and their potential uses.

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**II. Write explanatory notes on any SIX of the following: (6x5=30)**

7. Discuss how international waste management protocols, such as the Basel Convention, influence national waste policies in developing countries.
8. Explain the responsibilities of the Central Pollution Control Board (CPCB) in regulating waste management in India. How does it enforce compliance among industries?
9. Describe the process of measuring organic content in wastewater, including the steps involved in performing a BOD test.
10. Analyze the role of chemical treatment processes in removing organic pollutants from wastewater. Give examples of chemicals used in this process.
11. Analyze the integration of Membrane Bioreactor Technology (MBR) in ZLD systems. How does it contribute to wastewater treatment efficiency?
12. Discuss the utilization of by-products from the dairy industry, such as whey, and their applications in food products or nutraceuticals.
13. Analyze how the extraction of lycopene from tomato peels can be beneficial for both the environment and human health.

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

14. Explain in detail deep well injection method of liquid waste disposal and write its merits and demerits
15. Discuss in detail about primary, secondary and tertiary waste treatment method.
16. Evaluate the potential of utilizing food processing wastes for producing value-added products like pectin, antioxidants, and food colorants. Discuss the economic and environmental benefits.

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