PH 591.1 Reg. No. | | | | | | |

St Aloysius College (Autonomous)

Mangaluru

Semester I – P.G. Examination – M.Sc. Food Science and Technology
November / December - 2023

FOOD CHEMISTRY

Time: 3 hrs. **Max Marks: 70**

I. Answer any SIX of the following: **(6x3=18)**

1. Write a note on importance of water and respective chemistry of ice formation.
2. Recall the primary elements that contribute to super secondary structures in proteins?
3. Write a brief note on Guar Gum.
4. Define carbohydrates and explain their importance in food chemistry.
5. Write a note on Emulsion.
6. Why are trans fats used? What is the problem with industrial trans fats?
7. Write a note on cofactor and its types.

II. Answer any FOUR of the following: **(4x7=28)**

8. Propose strategies for controlling water activity to extend the shelf life of a specific food product.
9. Critically assess the impact of enzymatic browning on the quality and nutritional value of fruits and vegetables during processing. Suggest methods to control enzymatic browning effectively.
10. Examine the concept of fat substitutes in food manufacturing. Discuss their potential benefits and drawbacks in terms of taste, texture, and health.
11. Summarize the role of denaturation in food preparation, such as coagulation in dairy products.
12. Critically assess the role of flavors in food products. Explain how flavor compounds are affected by processing methods and storage conditions.

III. Answer any TWO of the following: **(2 x12=24)**

13. Explain the classifications of proteins with examples.
14. Critically analyze the theory of Enzyme catalysis, including the enzyme-substrate complex, active sites and catalytic mechanism.
15. Discuss in detailed the physical and chemical properties of lipids.

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Semester I – P.G. Examination – M.Sc. Food Science and Technology
November / December - 2023

PRINCIPLES OF FOOD PROCESSING AND PRESERVATION

Time: 3 hrs. **Max Marks: 70**

I. Answer any SIX of the following: **(6x3=18)**

1. Name two chemical factors and give an example of a miscellaneous factor that can cause food spoilage.
2. What is oil turnover? How is it calculated?
3. Write a short note on the process of flash freezing.
4. List main changes to food kept in frozen storage.
5. What are the stags of reconstitution process in rehydration?
6. Write a short note on factors affecting drying process.
7. Write a short note on slow and quick freezing on foods.

II. Answer any FOUR of the following: **(4x7=28)**

8. Elucidate the process of ultrasound treatment and applications and advantages in food industries.
9. Compare and contrast on the types of smoking and what makes food smoke?
10. Explain why the understanding of thermal death time is important in food preservation.
11. Explain the process of freezing using a freezing curve.
12. Describe the basic principle behind UHT processing and how it differs from traditional pasteurization methods.

III. Answer any TWO of the following: **(2 x12=24)**

13. Elucidate the process of pulse electric field and applications and advantages in food industries.
14. What is the difference including the advantage and disadvantage of using different types of oils for deep frying considering smoke points, health, cost and flovour.
15. Discuss the unit operation of membrane separation with illustration of different types of membranes and their application in food industries.

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FRUITS AND VEGETABLES PROCESSING TECHNOLOGY

Time: 3 hrs. **Max Marks: 70**

I. Answer any SIX of the following: **(6x3=18)**

1. What are dehiscent and indehiscent fruits?
2. Make a short note on natural colors.
3. Define climatric and non-climateric fruits with examples.
4. List out the quality changes in frozen fruits and vegetables.
5. What are Intermediate moisture Foods (IMF), and why are they impotant in food processing?
6. What is the key difference between squash and cordial in fruit beverage processing?
7. What are the challenges in processing specific vegetable fibers?

II. Answer any FOUR of the following: **(4x7=28)**

8. Discuss the role of ethylene in coordinating various biochemical changes during fruit ripening, including changes in color, flavor, and texture.
9. Explain the role of pre-processing in the fruit and vegetable industry, emphasizing its significance in terms of quality and safety. Provide examples of pre-processing techniques used in the industry.
10. Discuss the processing of fruit and vegetable fibre in food industry.
11. Explain the importance of edible coatings in shelf life enhancement of fruits.
12. Elaborate on canning of fruits and vegetables.

III. Answer any TWO of the following: **(2 x12=24)**

13. Describe in detail the technology in processing of various tomato products.
14. Elaborate on fruit juice extraction, clarification and methods of bottling.
15. Discuss the significance of controlled and modified atmospheric storage of fruits and vegetables in shelf life enhancement.

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St Aloysius College (Autonomous)

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Semester I – P.G. Examination – M.Sc. Food Science and Technology
November/December - 2023

PROCESSING OF MILK AND DAIRY PRODUCTS

Time: 3 hrs. **Max Marks: 70**

I. Answer any SIX of the following: **(6x3=18)**

1. Give the different Indian breeds of milking cows.
2. Write a note on milk and milk product order 1992.
3. What is the purpose and objective of clarification and filtration of milk?
4. Write on grading of milk based on MBRT test.
5. Describe the chemistry behind the clarification process in ghee production and why it results in a longer shelf life.
6. Give the major types of cheese and basic difference in their composition.
7. Mention any 2 adulterants in milk and their detection.

II. Answer any FOUR of the following: **(4x7=28)**

8. Explain the different purification techniques of milk protein.
9. Write a note on Reverse osmosis in dairy industry.
10. How does the Roller drying and spray drying process contribute to the manufacture of Whole milk and skim milk powder?
11. Explain the differences between whey protein concentrates and whey protein isolates, considering their protein content and applications.
12. Compare and contrast lactose powder and infant milk powder.

III. Answer any TWO of the following: **(2 x12=24)**

13. Explain the nutritional composition of milk and factors affecting it.
14. Compare and contrast UHT processed and sterilized milk. Create and explain a flowchart illustrating the steps involved in the manufacturing of UHT processed. Comment on the equipment used.
15. Give the FSSAI specifications for Evaporated milk. Elaborate on its manufacturing steps with the help of a flowchart.

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

November / December - 2023

WASTE MANAGEMENT AND ENVIRONMENTAL SUSTAINABILITY

Time: 3 hrs. **Max Marks: 70**

I. Answer any SIX of the following: **(6x3=18)**

1. Provide the detailed classification of waste.
2. Enumerate on the types of waste generated from fruits and vegetable processing
3. Write a note on recycling of food industry waste.
4. Explain about land-filling as a method of treatment for solid waste.
5. Write a note on elements of importance in efficient management of wastes from food industries.
6. List the Physical, chemical and biological characteristics of waste water.
7. Write a note on characterization of by-products from cereals & pulses processing industry.

II. Answer any FOUR of the following: **(4x7=28)**

8. Discuss in detail about types of waste generated and characterization of wastes from dairy industry.
9. Explain the Legal aspects related to storage and disposal of solid waste with special emphasis on burial.
10. Explain physical unit operation in waste water treatment.
11. Discuss on ion exchange treatment.
12. Discuss on Effluent treatment plants (ETPs).

III. Answer any TWO of the following: **(2 x12=24)**

13. Provide the detailed note on types of waste generated and characterization of wastes from fish, meat and poultry industry.
14. a. Provide the detailed note on legislation related to environmental management with special reference to NGT
    b. Explain in detail about biological oxygen demand.
15. Explain in detail about Zero liquid Discharge, its Challenges and membrane bioreactor technology employed for the same.

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Semester I – P.G. Examination – M.Sc. Food Science and Technology
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FOOD PLANT MANAGEMENT AND ENTREPRENEURSHIP

Time: 3 hrs. **Max Marks: 70**

I. Answer any SIX of the following: **(6x3=18)**

1. List the the role of automation and technology in modern food plants
2. Define Food Plant Management. Provide two key objectives associated with effective food plant management
3. List and briefly describe the common methods used in sales forecasting in food industry.
4. What is production planning, and why is it crucial in food plant management?
5. Describe the importance of segregating different types of waste in a processing facility.
6. Name three key components of effective human resource management in the food industry.
7. List and describe three key characteristics of problems suitable for OR analysis

II. Answer any FOUR of the following: **(4x7=28)**

8. As a food plant manager, describe the steps you would take to conduct a hazard analysis and implement Hazard Analysis and Critical Control Points (HACCP) principles in your facility, in compliance with Indian regulations.
9. How can budgetary control be used to improve the overall efficiency and profitability of a food plant? Provide examples.
10. Analyze the environmental impact of different waste storage and disposal methods.
11. How does the external market conditions affect the decision making process in a food palnt?
12. Elaborate on the forms of ownership and thier features, benefits and limitations.

III. Answer any TWO of the following: **(2 x12=24)**

13. Critically assess the differences between an entrepreneur and a manager in the context of a food processing enterprise. How do their respective roles impact the success of a food plant?
14. Assess the sustainability practices and their impact on cost control in food plant management.
15. Design an Effluent Treatment Plant (ETP) for a large-scale dairy processing facility.

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