St Aloysius College (Autonomous) Mangaluru

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

May - 2024

Food Process Engineering and Instrumentation

Time: 3 hrs.

Max Marks: 70

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

1. State the principle behind the formation of steam in a boiler.
2. Define texture profile analysis (TPA) and its components.
3. Discuss the principles behind high-pressure processing (HPP) in food preservation.
4. Define mild steel (MS), stainless steel (SS) as materials for food plant construction.
5. Give three examples of how viscosity measurements are used to monitor and control food production processes.
6. Design a simple evaporative cooling system for a specific industrial application.
7. Explain the role of dielectric properties in food processing.

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

8. Explain the concept of steam quality in boiler operations. How does steam quality affect food processing? Provide examples.
9. Explain the various sensory analysis methods. Discuss the factors that influence the reliability and reproducibility of sensory analysis.
10. Discuss mechanical properties of food with example.
11. Evaluate the advantages and limitations of FTIR spectroscopy compared to other spectroscopic techniques in food analysis.
12. Discuss the different types of pumps used in food industries.

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

13. Compare and contrast the concepts of internal energy and enthalpy. Illustrate their differences with relevant physical processes.
14. Define Heat transfer. Discuss the mechanisms of heat transfer: conduction, convection & radiation.
15. Explain the working principle of electronic nose and electronic tongue. Give the applications of each.

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Reg. No.

St Aloysius College (Autonomous)
Mangaluru
Semester II – P.G. Examination – M.Sc. Food Science and Technology

May - 2024
Processing Technology of Cereals, Pulses and Oilseeds

Time: 3 hrs.   Max Marks: 70

I.   Answer any <u>SIX</u> of the following: (6x3=18)

1. List the factors affecting the quality of vital wheat gluten.

2. Define bread making flour.

3. Name three methods of rice parboiling.

4. Write a note on any two methods of oil extraction from oilseeds.

5. Define the term 'miso' in context of fermented foods.

6. List three different types of corn commonly used. Briefly describe one unique characteristic of each type.

7. Differentiate between dry milling and wet milling of pulses.

II.   Answer any <u>FOUR</u> of the following: (4x7=28)
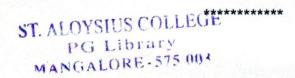
8. Explain how the protein content in flour influences the quality of bread, citing specific examples.

9. Explain the structure and chemical composition of wheat.

10. Explain the steps in wet milling of corn.

11. Write a note on structure and composition of pulses and legumes.

12. Analyze the role of extrusion cooking in the development of pulse based products.

III.   Answer any <u>TWO</u> of the following: (2 x12=24)

13. Give the structure and composition of oats. Elaborate on the steps involved in milling of oats.

14. Evaluate the impact of different rice varieties on the sensory attributes, nutritional content, and market acceptability of flaked, parched, and puffed rice products.

15. What is byproduct utilization? Why is it important? Discuss the byproduct utilization of oilseeds.

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St Aloysius College (Autonomous)
Mangaluru
Semester II – P.G. Examination – M.Sc. Food Science and Technology

May – 2024
Spices and Plantation Crops Technology

Time: 3 hrs.   Max Marks: 70

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

1. What are the primary steps involved in the post-harvest processing of mint leaves?

2. Define adulteration in spices. Give three examples of common adulterants found in spices.

3. Write a short note on chicory. How can it be detected in coffee?

4. Write on any four types of coffee preparation.

5. Differentiate between dry and wet processing of coffee.

6. Compare and contrast the manufacturing processes of soluble tea, instant tea, and tea concentrates.

7. Briefly explain the processing of virgin coconut oil.

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

8. Explain threshing and drying of pepper. Justify their importance.

9. Describe the cupping process used in coffee grading. Include the parameters evaluated and their significance.

10. Explain the methods of Brewing coffee.

11. Describe the steps involved in the traditional cocoa bean processing method, from harvesting to the production of cocoa liquor, emphasizing the role of fermentation and drying in the process.

12. Discuss the composition of tea. Briefly explain the processing of green and oolong tea.

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

13. Give the market statistics of cardamom. Elaborate on its processing with emphasis on curing method.

14. Discuss the processing of Palm and Arecanut. Explain the byproduct utilization.

15. Discuss in detail the processing of conventional and non-conventional tea. Explain CTC method in tea processing.

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

May - 2024
RESEARCH METHODOLOGY AND ETHICS

Time: 3 hrs.   Max Marks: 70

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

1. Define the term "research" and differentiate between quantitative and qualitative research methods.

2. Define what constitutes a research problem and differentiate it from a research question.

3. Classify the following as primary or secondary data: a) Census records, b) Survey responses, c) Laboratory experiments.

4. Define statistical computation and explain its importance in research.

5. List three regulations governing the ethical use of animals in research and briefly explain their importance.

6. Define standard deviation (SD) and range Calculate the SD and range for the given dataset: 10, 15, 20, 25, 30.

7. Define research design and explain its significance in the research process.

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

8. Examine the role of international treaties and agreements in harmonizing intellectual property laws across different countries.

9. Explain the difference between probability sampling and non-probability sampling methods. Provide examples of each.

10. Examine the application of the Chi-square test for goodness of fit in genetics research, providing a relevant example.

11. Explain the advantages and disadvantages of mean, median and mode.

12. Discuss the role of peer review in ensuring quality of scientific reports.

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

13. Evaluate the impact of sampling errors on the validity and generalizability of research findings. Provide examples to support your discussion.

14. Provide a step-by-step guide on how to conduct research using research process.

15. Perform a two-sample t-test for the following data: Group 1 (n=10, mean=65, SD=9) and Group 2 (n=12, mean=60, SD=8). Interpret the results.

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