Register No.:   ....   Name: ....

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)
(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)
FIFTH SEMESTER B.TECH DEGREE EXAMINATION (S), FEBRUARY 2024
FOOD TECHNOLOGY
(2020 SCHEME)

Course Code :   **20FTT305**

Course Name: **Food Analysis**

Max. Marks :   **100**   **Duration: 3 Hours**

PART A
(Answer all questions. Each question carries 3 marks)

1. Define FSSA 2006 and explain its primary objective in the context of food safety and standards.
2. Outline the importance of proper sampling techniques in ensuring compliance with FSSA 2006. Provide an example of a situation where accurate sampling is critical.
3. Define pH and titratable acidity in food analysis. How do these parameters contribute to the sensory attributes and safety of food products?
4. Explain the principle behind Thermal Gravimetric Analysis (TGA) in food analysis. How do the techniques contribute to understanding the thermal properties of food components?
5. List out the factors that can lead to deviations from Beer Lambert's Law in spectrophotometric analysis.
6. Define fluorescence spectroscopy and briefly explain the underlying principle behind it.
7. Explain the principles of column chromatography and pictorially explain how it separates different components in a mixture.
8. Describe the advantages and limitations of using supercritical fluids as the mobile phase in supercritical fluid chromatography.
9. How does the pH gradient in an Iso-electric focusing gel contribute to the separation of molecules?
10. How does gel electrophoresis exploit the charge and size properties of biomolecules?

PART B
(Answer one full question from each module, each question carries 14 marks)

MODULE I

11. Explain the significance of conducting various types of analyses in the field of food technology. List out different types of analyses and explain   (14) their importance in ensuring food safety and quality.

OR

12. a) What are the important roles and functions of the Codex Alimentarius Commission (CAC) in the context of food safety and quality assurance? (7)

b) What are the key responsibilities of the Export Inspection Council in guaranteeing food quality? (7)

MODULE II

13. a) Explain the concept of proximate analysis in food analysis. (4)

b) Explain, how moisture content in food is determined and why it is an essential parameter in food quality assessment? (10)

OR

14. a) Explain the importance of dietary fiber analysis in food products. (2)

b) Outline any three methods used to quantify dietary fiber content and discuss the challenges associated with this analysis. (12)

MODULE III

15. a) Explain in detail the principles underlying Beer-Lambert's Law. Describe the mathematical relationship it establishes. (7)

b) Discuss a specific example of a scenario where Beer-Lambert's Law is used in food analysis and discuss the steps involved in making accurate concentration determinations. (7)

OR

16. Explain in detail the principles and working mechanism of Atomic Emission Spectroscopy (AES). Describe how AES is used to analyze elements in a sample with its advantages and disadvantages. (14)

MODULE IV

17. Explain the principles and procedures of Thin Layer Chromatography (TLC) based on an application in food analysis in detail. Describe the key components of a TLC setup and their functions. (14)

OR

18. a) Explain the principles and procedures of High-Performance Liquid Chromatography (HPLC) in detail. (10)

b) What are the major factors that influence the efficiency and resolution of a High-Performance Liquid Chromatography separation? (4)

MODULE V

19. Explain the principle behind Radioimmunoassay (RIA) and how it is used to quantify specific molecules in a sample. (14)

OR

20. a) Explain the principle and working mechanism of rocket gel electrophoresis. (10)

     b) Discuss the factors that influence the resolution and efficiency of rocket gel electrophoresis. (4)

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