

Register No.: Name:

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

FIFTH SEMESTER B.TECH DEGREE EXAMINATION (R,S), DECEMBER 2023

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. Differentiate between representative sampling and stratified sampling. List any 3 differences.
2. Name the agency that was established to develop international standards and safety practices for foods and agricultural products. Outline the other major roles played by the agency.
3. You are determining the total ash content of a product using the conventional dry ashing method. Your supervisor asks you to switch to a conventional wet ashing method because he/she has heard it takes less time than dry ashing. (a) Do you agree or disagree with your supervisor concerning the time issue, and why? (b) Not considering the time issues, justify why you might want to continue using dry ashing, and why you might change to wet ashing?
4. Differentiate between pH and titratable acidity. List any 3 differences.
5. State Beer Lambert's law with its mathematical expression.
6. In spectroscopy, how is absorption different from emission?
7. Define partition coefficient and R_f value.
8. Describe the principle of supercritical fluid chromatography.
9. How does separation happen in electrophoresis?
10. Assess the merits of capillary electrophoresis over conventional slab-gel electrophoresis.

PART B

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

MODULE I

11. a) Name the Act that was brought to consolidate the laws related to food in India. Analyse the salient features of the Act. (8)
b) Outline the key features of AOAC International. (6)

OR

12. a) Assess the role of Export Inspection Council. (7)
b) Your friend owns a food testing lab. He/she is currently faced with issues like poor client confidence and lack of formal recognition. (7)

Convince him/her of the benefits of getting accredited. Suggest him/her the agency to be approached and guide him/her through the stages of accreditation.

MODULE II

13. Explain and contrast the procedures involved in determining the fat content of a food product by the following methods. Indicate for each method the type of sample and application that would be appropriate for analysis: (i) Soxhlet (ii) Babcock (iii) Mojonnier (14)

OR

14. Briefly describe a method that could be used for each of the following: (i) To measure total carbohydrates (ii) To measure total reducing sugar (iii) To measure total starch. (14)

MODULE III

15. a) List the steps involved in determination of unknown concentration in an analyte using a calibration curve. (8)
b) A particular food coloring has a molar absorptivity of $3.8 \times 10^3 \text{ cm}^{-1} \text{ M}^{-1}$ at 510 nm. (i) What will be the absorbance of a $2 \times 10^{-4} \text{ M}$ solution in a 1 cm cuvette at 510 nm? (ii) What will be the percent transmittance of the solution in (i)? (6)

OR

16. Describe the principle, construction and working of a Fluorescence Spectrophotometer with relevant illustrations. (14)

MODULE IV

17. Summarize the principle and working of High-performance liquid chromatography with its applications. (14)

OR

18. Compare and contrast column chromatography from thin layer chromatography. (14)

MODULE V

19. With neat diagrams, explain the experimental set-up, working and applications of SDS-PAGE. (14)

OR

20. a) Describe the principle, procedure and applications of Radio immunoassay. (7)
b) Describe the principle, procedure and applications of Rocket immunoelectrophoresis. (7)
