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Register No: …… Name: .....

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

FIRST SEMESTER B.TECH DEGREE EXAMINATION(R), NOVEMBER 2024

Food Technology

(2024 SCHEME)

Course Code : 24EST1004-H

Course Name : Chemistry for Food Engineering

Max. Marks : 60 **Duration:2.5 Hours**

PART A

(Answer all questions. Each question carries 3 marks)

1. How does water affect the quality and shelf life of foods such as bread or meat.
2. Define gelatinization and its occurance in starch.
3. What is the Maillard reaction? Why is it important in food?
4. What is hydrolytic rancidity and how does it affect fat quality?
5. Define vitamins and classify them based on solubility.

PART B

(Answer one full question from each module, each question carries 9 marks)

MODULE I

6. Analyze the relationship between water activity and microbial growth in different food systems using a sorption isotherm. 9

OR

7. a) What are the critical points (temperature and pressure) of water? 3
   b) How would you relate the phase changes of water (e.g., freezing, boiling) to the preservation of food products? Provide examples. 6

MODULE II

8. Discuss how modified starch is produced and its significance in food applications. Give examples. 9

OR

9. Describe the caramelization process and the chemical changes that sugar undergoes during heating. How does it affect the flavor and color of foods? 9

MODULE III

10. Explain the hierarchical organization of protein structure with examples. 9

OR

11. Apply the knowledge of enzyme catalysis to explain how temperature and pH influence enzyme activity in food processing. Provide examples. 9

MODULE IV

12. Explain the relationship between the crystal formation of fats and their texture in food products like chocolate and butter. 9

OR

13. Explain the structure and classification of fatty acids, focusing on the difference between saturated and unsaturated fatty acids. 9

MODULE V

14. Explain the functional roles of major minerals and trace elements in the human body. Discuss how deficiencies or excesses of these elements affect health. 9

OR

15. Explain the role of sodium, potassium, and chloride in maintaining fluid balance in the body. How do these minerals influence the sensory properties of food? 9

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