

Register No.: Name:

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

FOURTH SEMESTER B.TECH DEGREE EXAMINATION (R,S), MAY 2024

FOOD TECHNOLOGY

(2020 SCHEME)

Course Code : 20FTT204

Course Name: Engineering Properties of Food Materials

Max. Marks : 100

Duration: 3 Hours

PART A

(Answer all questions. Each question carries 3 marks)

1. What are the different types of density? How is each type of density measured?
2. What is the drag coefficient and how does it relate to terminal velocity?
3. How does surface roughness affect friction?
4. How do the properties of the contacting bodies affect friction?
5. Describe how do boiling point and freezing point relate to thermal properties? How can they be measured?
6. Exemplify the L*a*b system of color measurement.
7. How is rheology different from traditional mechanics?
8. Elucidate the elastic and plastic behavior of the biological materials.
9. How does the age of food products affect their texture, and what factors contribute to this effect?
10. List out the mechanical tests that can be used to evaluate food materials, and how are they related to texture?

PART B

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

MODULE I

11. a) What are the criteria for describing the shape of a fruit and vegetables? Explain the influence of each parameters in the determination of shape (8)
b) Describe the different methods used for the determination of porosity of food (6)

OR

12. What is Gibbs Absorption equation and how is it used to measure surface properties? Derive the equation (14)

MODULE II

13. a) What are the laws of friction and how do they explain the relationship between frictional force and normal force? (10)
b) How does sliding velocity affect friction? (4)

OR

14. Derive Janssen and Rankine's equation of pressure distribution in storage structures and compression chambers (14)

MODULE III

15. What is thermal conductivity and how is it related to heat transfer? How can thermal conductivity be measured? (14)

OR

16. Define specific heat and how does it differ from thermal conductivity? What methods are used to measure specific heat? (14)

MODULE IV

17. Explain stress-strain behavior and how is it used in rheology? Also explain the different modes of deformation (14)

OR

18. a) Explain Newton's Law of viscosity. Differentiate between viscosity, kinematic viscosity and apparent viscosity. (7)
b) Differentiate uniaxial compression and uniaxial tension (7)

MODULE V

19. What is the texture profile method and how is it used to evaluate food texture? How does it differ from other methods of texture analysis? (14)

OR

20. a) How is firmness related to hardness in the context of texture evaluation? What is dynamic hardness, and how is it measured? (8)
b) How do water content and temperature affect the texture of foods, and how are these factors measured? (6)
