

Register No.: Name:

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

FOURTH SEMESTER B.TECH DEGREE EXAMINATION (S), AUGUST 2023

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. Describe any two methods of measuring surface area and their importance?
2. Illustrate the relationship between wettability and contact angle with a schematic diagram?
3. What is angle of repose? Explain its importance.
4. How does surface roughness affect the frictional properties of agricultural materials?
5. Discuss the effect of moisture content on the dielectric characteristics of food?
6. Describe any two unsteady-state methods for the measurement of thermal conductivity?
7. Explain the texture evaluation process by uniaxial compression test?
8. Describe non-Newtonian fluids and how they are classified?
9. Elaborate on the mechanical aspects of textural evaluation of food?
10. What is a firmness tester used for? Describe the working mechanism?

PART B

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

MODULE I

11. a) Schematically explain any three methods for the determination of volume and density? (7)
b) Derive the mathematical equation for calculating terminal velocity of spherical bodies? (7)

OR

12. a) Derive Gibb's Adsorption equation expressing the relationship between Surface free energy and excess concentration of solutes? (7)
b) With a neat labelled diagram explain the working mechanism of air comparison pycnometer? (7)

MODULE II

13. Derive Janssen's equation for determining horizontal and lateral pressure in storage silos? (14)

OR

14. a) Using suitable diagrams, explain any two methods for determining the coefficient of friction of agricultural materials. (7)
b) What is rolling resistance? Investigate how rolling resistance is measured in the food processing industry? (7)

MODULE III

15. Define calorimetry? Illustrate the working principle of differential scanning calorimetry with a neat labeled diagram? (14)

OR

16. a) Discuss the advantages and disadvantages of spectrometric methods over colorimetric methods on the quality evaluation of food substances? (7)
b) Elaborate on the CIE color measurement system in the food industry? (7)

MODULE IV

17. Define Yield stress? Explain the stress – strain behavior of newtonian liquids? (14)

OR

18. Explain any four models explaining the stress strain behavior of biological materials. (14)

MODULE V

19. a) Explain the effect of age and water content on textural attributes of food commodities? (7)
b) Discuss any three mechanical test applicable to food materials? (7)

OR

20. a) How does objective evaluation differ from sensory evaluation technique? (7)
b) Describe how primary and secondary characteristics are measured in Texture profile analysis? (7)
