Register No.: …… Name: ……..

# SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

**FOURTH SEMESTER B.TECH DEGREE EXAMINATION (Regular), JULY 2022**

**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. List any three physical characteristics of the food products .
2. Analyze the relation between Hygroscopic material and Equilibrium moisture content.
3. Indicate the term used to measures of the ability of a unit of solid material to withstand a shear stress.
4. What are the various laws of friction?
5. Interpret the term enthalpy with respect to the change in energy of the system.
6. Indicate the term used to determine the materials interaction with electromagnetic radiation
7. Determine the application of Rheological study in Jams and Jellies .
8. Write a short note on Pseudoplastic properties.
9. Indicate the features of Crisp and Crunchy foods.
10. Represent the three major acceptability factors in food consumption.

## PART B

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

### MODULE I

11. a) A food's storability is directly related to moisture content, along with temperature and oxygen availability. High amounts of available moisture lead to mold growth and microbial activity. Fruit must be dried below 30% and agricultural grains below 12% for good long-term storage. Justify the statement by analyzing the role of moisture content in the stability of food products along with the table of water activity required for the growth of microorganism (10)

    b) Food density influences its texture or mouth feel. Support the statement with necessary proof. (4)

**OR**

12. a) Statement 1: Porosity is the percentage of air between the particles compared to a unit volume of particles. Statement 2: If the object is heavier than water, it must be suspended in the water by a rod or other support to insure that the added mass of the object is (10)

not measured.
Statement 1 should be Illustrate using packed bed drying, and statement 2 should be expressed as a formula to calculate the volume of dispensed water.

b) Determine the role of particle size in analyzing the Physical properties of food materials. (4)

**MODULE II**

13. a) Summarize on pressure distribution in storage structures. (10)
b) Elaborate the process of tri-axial test and indicate its relation with the determination of Angle of internal friction (4)

**OR**

14. a) Outline the terms Static, Kinetic and Coefficient of friction (6)
b) Find the term which is affected by the size, shape, moisture content and orientation of the grains and mention its types. (8)

**MODULE III**

15. a) Explain the following thermal property models for food components
    1. Thermal conductivity
    2. Thermal diffusivity
    3. Specific heat

    (7)
b) Define the term triple point and Initial freezing point (7)

**OR**

16. a) Interpolate the principle of Polarization of dielectrics . (7)
b) Elaborate the property that describes how materials interact with electromagnetic radiation. (7)

**MODULE IV**

17. List out the area in the food industries where the Rheology plays a significant role (14)

**OR**

18. Explain the classification of fluids depending on the applied shear force (14)

**MODULE V**

19. a) Analyze the classification of textural characteristics (8)
b) Explain how the food processing affects the texture (6)

**OR**

20. a) Summarize the methods for the evaluation of food texture (8)
b) Conclude the methodologies in Sensory evaluation of Texture (6)

**********