

Register No.: ..... Name: .....

**SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)**

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

**FIFTH SEMESTER B.TECH DEGREE EXAMINATION (Regular), DECEMBER 2022****FOOD TECHNOLOGY****(2020 SCHEME)****Course Code : 20FTT301****Course Name: Food Process Engineering****Max. Marks : 100****Duration: 3 Hours****PART A*****(Answer all questions. Each question carries 3 marks)***

1. Define food processing and explain its effect in improving the quality of food.
2. Explain the process of blanching with suitable diagram?
3. Illustrate different size reduction laws used to calculate energy requirement of solid foods?
4. What is an emulsifier? Explain its functions?
5. Define the following a) Critical Moisture content b) Equilibrium moisture content and c) Moisture sorption isotherm
6. Describe the methods used to thaw food.
7. Suggest a method to reduce oil absorption during deep fat frying process?
8. List out the aromatic compounds formed in oils during frying process?
9. Differentiate between single screw and twin-screw extruder
10. Explain the principle and working mechanism of an Ohmic heater?

**PART B*****(Answer one full question from each module, each question carries 14 marks)*****MODULE I**

11. a) Explain any three dry cleaning methods with suitable diagrams? (7)
- b) With diagrammatic representation explain the thermal inactivation parameters (D, Z and F values). (7)

**OR**

12. a) Explain the types of pasteurization? Elucidate the working of HTST Pasteurizer? (7)
- b) Differentiate sorting and grading? Explain the criteria and methods of raw material processing? (7)

**MODULE II**

13. a) Food is milled from 4mm to 0.0012 mm using a 10 hp motor. (7)

Would this motor be adequate to reduce the size of the particle to 0.00008mm? Assume Rittinger's equation and 1 hp = 745.7 W.

- b) With neat diagram explain the working of a ball mill? (7)

**OR**

14. Outline the two theories behind homogenization process? With the help of a suitable diagram explain the process of single stage homogenization? (14)

**MODULE III**

15. a) Explain the different stages of drying with suitable diagram? (7)  
b) Describe the principle, application and working of a spray drier with a schematic diagram? (7)

**OR**

16. Define food freezing? Derive Plank's equation for Freezing time calculation? (14)

**MODULE IV**

17. With suitable diagram explain the principle and working mechanism of Direct and Indirect heating ovens? (14)

**OR**

18. a) Elucidate the heat and mass transfer mechanism during baking? (10)  
b) Explain the methods involved in commercial frying process? (4)

**MODULE V**

19. a) Explain the process and application of radio frequency heating in minimal processing of food? (7)  
b) Explain the principles and applications of hurdle technology as a Food preservation technique? (7)

**OR**

20. With suitable diagram explain the principle and microbial inactivation mechanism of High-Pressure processing? (14)

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