

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

September / October 2023 Supplementary Examinations

Programme: B.E

Branch: Chemical Engineering

Course Code: 19CH4DELA2

Course: Food Engineering

Semester: IV

Duration: 3 hrs.

Max Marks: 100

Date: 12.09.2023

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

UNIT - I

- 1 a) Discuss the general aspects of food industry in detail. **10**
- b) Explain water activity and sorption behavior in foods. **10**

UNIT - II

- 2 a) Describe the food deterioration. Explain the cause of food deterioration and their effects on food quality. **10**
- b) Explain i) HACCP ii) FSSAI **10**

UNIT - III

- 3 a) Explain the processing of raw milk with a neat flow sheet. **10**
- b) Explain the continuous High Temperature Short-Time (HTST) pasteurization system with all its components. **10**

OR

- 4 a) With a neat sketch, explain Ohmic heating. **10**
- b) A spherical food product is being frozen in an air-blast freezer. The initial product temperature is 10°C and the cold air -40°C. The product has a 7 cm diameter with density of 1000 kg/m³, the initial freezing temperature is -1.25°C, the thermal conductivity of the frozen product is 1.2 W/m K, and the latent heat of fusion is 250 kJ/kg. Compute the freezing time. **10**

UNIT - IV

- 5 a) List the preservatives added to the food and explain their role. **10**
- b) What are food additives? Explain the need for food additives. **06**
- c) What is the role of chelating and leavening agents? **04**

UNIT - V

- 6 a) Explain construction and working of twin-screw extruders. **10**
- b) Discuss the functions of food packaging. Classify food packaging. **10**

OR

- 7 a) Discuss the mass transfer in the packaging materials. **10**
- b) Explain the laws related to labeling of the following foods. **10**
 - i) Meat food products order 1973
 - ii) Genetically modified food

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.