Ref. No. Ex/FTBE/PC/B/T/223/2023

B.E (FTBE) SECOND YEAR, SECOND SEMESTER EXAMINATION 2023

PRINCIPLES OF FOOD PRESERVATION-I **TIME: 3 H** **FULL MARKS = 100**

PART- I (50 MARKS)

ANSWER Q1 AND ANY ONE FROM THE REST

USE SEPARATE ANSWER SCRIPT FOR EACH PART

Q1. I. Describe the following with the aid of graphs: **2 × 5 = 10**

a. Heat removal during freezing of foods
b. Crystal growth

II. Define the following: **5 × 2 = 10**

a. T_g
b. Rate of freezing
c. Drip loss
d. Freeze burn
e. Quick freezing

OR

Q1. Differentiate between (any 5): **5 × 4 = 20**

a. Homogenous vs. Heterogeneous nucleation
b. Contraction vs. Expansion during freezing
c. Direct freezing vs. Indirect freezing
d. Freezing of Milk vs. Strawberry jam in bottles
e. Sarcoplasmic vs. Myofibrillar protein damage during freezing
f. Eutectic point of NaCl/water vs. IF_P of the mixture

Q2. Analyze the following with the aid of diagrams and graphs wherever necessary (any 5): **5 × 6 = 30**

a. Blanching is ineffective as a pretreatment method when frozen foods are to be stored at -10°C.
b. Effect of initial concentration on decrease of volume and increase in molality of unfrozen phase in a 5% sucrose solution
c. Heat transfer, and not mass transfer limits rate of crystallization during freezing.
d. Quick freezing is recommended for berries.
e. Addition of maltodextrin enhances storage temperature of ice cream.
f. Changes in physicochemical properties of unfrozen water during freezing.

[Turn over

Ex/FTBE/PC/B/T/223/2023

BE (FTBE) 2 ND YEAR 2 ND SEMESTER EXAMINATION 2023

PRINCIPLES OF FOOD PRESERVATION I

Time: 3hours **Part II** **Full Marks: 100**

(Marks 50)

Answer any five questions from the following: 5x10

1.a)Define: Free moisture and bound moisture of food, water activity, relative humidity.

b) Explain about shrinkage of food during drying. 6+4

2a).Explain different steps of drying by convection.

b) What is the working principal of tray drier? 6+4

3a) What is meant by foam mat drying? Explain the process of foam mat drying.

b) A food product contains 22% moisture on wet basis. Calculate the moisture content on dry basis. (2+5)+3

4.a) What is Osmotic dehydration technique ? Give two examples of Osmotic agent.

b) Mention the types of mass transfer in Osmotic dehydration process.

c)What are the advantages of Osmotic dehydration process. 3+4+3

5a)Explain the effect of drying on vitamin and antioxidant content of food material.

b) A dry food product has been exposed to a 30% RH environment at 15^0C for 5 hours without a weight change. The moisture content has been measured and it is at 7.5% wet basis. The product is moved to 50% RH environment and a weight increase of 0.1kg/kg product occurs before equilibrium is achieved. Determine the moisture content of the product on dry basis in both environments. 3+7

6. Write short notes on: (any two)

a) disadvantages of IMF preservation b) micro wave drying

b) fluidized bed drying. 5+5