

2022

**FOOD PROCESSING MANAGEMENT/
FOOD PROCESSING TECHNOLOGY**

QP : Food Microbiologist

Paper : FPM/FPT-VC-4026

(Basics of Food Engineering)

Full Marks : 60

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

- 1. Answer the following questions : 1×7=7**
- (a) What is refrigerated storage?
 - (b) Define evaporation.
 - (c) What is reconstitution ratio?
 - (d) Define ERH.
 - (e) What is wet-bulb temperature?

(2)

- (f) Give any two instruments name used for drying purpose.
- (g) What is the importance of drying kinetics?
2. Write very short answer-type questions : $2 \times 4 = 8$
- (a) What is heat exchanger? Write the names of two kinds of heat exchanger.
- (b) What is dehydration and evaporation?
- (c) What are the main objectives of drying?
- (d) What is the difference between slow freezing and quick freezing?
3. Write short answer-type questions (any three) :
 $5 \times 3 = 15$
- (a) Write down the basic principles of evaporator and heat exchanger.
- (b) What is cryogenic freezing? Why is product with cryogenic freezing one of the best produced?
- (c) What is freeze burn? Which food items are highly susceptible to freeze burn? How can you minimize this kind of effects?
- (d) Explain different factors which influence the drying process.

(3)

- (e) Write down the formulas for estimation of moisture content of food in dry basis and wet basis. What is the impact of moisture content of foods in storage? Say for a food product the moisture content of the food in wet basis is 17.35%, calculate the moisture content of the same in dry basis.
4. Write essay-type questions (any three) : $10 \times 3 = 30$
- (a) List out some methods and equipments used for evaporation of foods. Explain any two of them.
- (b) Illustrate about tray drier and spray drier with suitable diagram.
- (c) Write about different freezers used in food processing.
- (d) Define F , Z and D value. Define thermal death point and thermal death time.
- (e) Solve the following :
- (i) How much of concentrated milk of 35% total solid is required to produce 150 kg/hr of milk powder of 95% total solid?

- (ii) Dried vegetable containing 7% moisture content (wet basis) was conveyed to a water spraying chamber. If the moisture content of vegetable required to be raised to 35% (wet basis), find the amount of water sprayed to vegetable.
