B. Tech.

(SEM. VIII) EXAMINATION, 2006-07

FOOD ENGINEERING (EL-III)

Time : 2 Hours] [Total Marks : 50

Notes : (1) Attempt all questions.
(2) In case of numerical problems assume data, wherever not provided.
(3) Be precise in your answer.

1. Attempt any two parts of the following : 7×2=14
   (a) Write and discuss unit operations involved in fruit processing.
   (b) Write short notes on :
       - ideal gas law
       - vapour pressure
       - partial pressure.
   (c) Discuss functioning of heat exchangers and their utilizations in food processing industry. Give examples.

2. Attempt any two parts of the following : 6×2=12
   (a) What is the driving force for heat and mass transfer during drying of foods ?
   (b) What are the important factors influencing the rate of heat transfer in concentrated products?

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(c) Write short note on:
- Refrigeration system
- Define cooling load and coefficient of performance.
- Write factors contributing cooling load in a cold storage of potato.

3. Attempt any four parts of the following: 3x4=12
(a) Differentiate between evaporation and dehydration.
(b) Define and discuss EMC (Equilibrium Moisture Content) and hysteresis.
(c) Explain forced circulation evaporators.
(d) Write short note on agitated thin film evaporator and its utility in food industry.
(e) Explain the batch type pan evaporators with working principles.
(f) What are the advantages of freeze drying over thermal drying.

4. Attempt any four parts of the following: 3x4=12
(a) Discuss the principles of spray drying.
(b) Explain working principles of freeze dryers and its utility in processing industry.
(c) Discuss methods of thermal processing involved in processing of apple product.
(d) Write short notes:
   - Drum dryer
   - Fluidized bed drying
   - Solar drying
(e) What is the difference between pasteurization and sterilization process in food products?
(f) Why sanitary and phyto sanitary measures are required for processing of food products?