8. Explain properties of dry air and air-vapour mixtures. How Psychrometric charts gives information about environmental conditions ?

No. of Printed Pages : 04 **Roll No. .....**

AA-801

M. Tech. EXAMINATION, Dec. 2017

(First Semester)

(B. Scheme) (Main & Re-appear)

FOOD TECHNOLOGY

FT-501

Principles of Food Engineering

Time : 3 *Hours*] [*Maximum Marks :* 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. Write the importance of mass and energy balance calculations for Food Engineers. What are the basic principles involved in determining the mass and energy balance ?

2. (a) Calculate, how many kilograms of a solution containing 10% NaCl can be obtained by diluting 15 kg of a 20% solution with water ?

(b) Draw a diagram and set up equations representing total mass balance and component mass balance for a system involving the mixing of pork (15% Protein, 20% Fat and 63% Water) and backfat (15% Water, 80% Fat and 3% Protein) to make 100 kg of a mixture containing 25% Fat.

Unit II

3. Differentiate between :

(a) Newtonian and Non-Newtonian fluids

(b) Laminar and Turbulant flow of fluids.

4. Explain the liquid transport system in flood industries. Explain different kind of pumps used in food processing plants.

Unit III

5. Discuss different modes of heat transfer and thermal properties of foods.

6. Derive an expression for the etimation of overall heat transfer coefficient. Describe plate and tubular heat exchangers.

Unit IV

7. Define the following with suitable examples :

(a) Effect to temperature on thermal inactivation of micro-organisms

(b) D value

(c) Z value.