AMFT03 FOOD PROCESSING AND CALCULATIONS

UNIT-1 UNITS AND DIMENSIONS
1.1 Basic and derived units, use of model units in calculations,
1.2 Methods of expression,
1.3 Compositions of mixture and solutions.
1.4 Ideal and real gas laws- Gas constant- calculations of pressure,
1.5 Volume and temperature using ideal gas law

UNIT-2 FUNDAMENTAL CALCULATIONS AND HUMIDITY
2.1 Calculation of absolute humidity,
2.2 Molal humidity,
2.3 Relative humidity and percentage humidity
2.4 Use of humidity in condensation and drying
2.5 Humidity chart, dew point.

UNIT-3 BASIC PRINCIPLES OF STOICHIOMETRY
3.1 Importance of material balance and energy balance in a process Industry-
3.2 Dimensions, Units, conversion factors and their use
3.3 Data sources, Humidity and applications.
3.4 Material Balance: Stoichiometric principles,
3.5 Application of material balance to unit operations like distillation, evaporation, crystallization, drying, extraction, Leaching.

UNIT-4 ENERGY BALANCE
4.1 Heat capacity of solids, liquids, gases and solutions,
4.2 Use of mean heat capacity in heat calculations,
4.3 Problems involving sensible heat and latent heats,
4.4 Evaluation of enthalpy.

UNIT-5 ENTHALPY CHANGES
5.1 Standard heat of reaction, heats of formation, combustion, solution, mixing etc.,
5.2 Calculation of standard heat of reaction
5.3 Effect of pressure and temperature on heat of reaction
5.4 Energy balance for systems without chemical reaction.

References Books

1 Venkataramani, V. and Anantharaman, N., "Process Calculations", Prentice Hall of India, New Delhi, 2011.
2 Himmelblau, D.M., "Basic Principles and Calculations in Chemical Engineering", Eighth Edition, Prentice Hall India, New Delhi, 2015