

1. A solution boils at a temperature of 380K and boiling point of water at a pressure in the vapour space is 373 K. Temperature of condensing steam is 399 K. What is the boiling point elevation of the solution and driving force for heat transfer?
2. An evaporator is operating at atmospheric pressure. It is desired to concentrate the feed from 5% solute to 20% solute (by weight) at a rate of 5000kg/hr. Dry saturated steam at a pressure corresponding to saturation temperature of 399K is used. The feed is at 298K and boiling point elevation is 5K. Calculate economy.

Latent heat of condensation of steam = 2185 KJ/kg

Latent heat of vaporization of water = 2257 KJ/kg

Specific heat of feed = 4.187 KJ/kg K