KSU – Chemical Engineering Department
ChE 320 (Chemical Reactor Engineering) – TUT #11-b
Name: **ID:** **SN:**

The equilibrium conversion plot for the liquid phase reaction:

A↔B

is shown in the figure. Pure A is fed at 300 K. Consider a series of reactors with inter-stage cooling so that the temperature is cooled to 320 K in each inter-stage cooler.

a. Determine the adiabatic equilibrium temperature and conversion.
b. How many reactors and coolers are necessary to achieve 90% total conversion.

$C_{pA} = C_{pB} = 50$ cal/mol.K
$\Delta H_R = -20000$ cal/mol A
$F_{Ao} = 10$ L/s