

KSU – Chemical Engineering Department
ChE 320 (Chemical Reactor Engineering) – TUT #11

Name:

ID:

SN:

The elementary liquid-phase reaction: $A \rightarrow B$, is carried out adiabatically in a CSTR with a volume of 2 m^3 . The specific reaction rate, k , is 3 h^{-1} at 350 K . The feed enters at $52 \text{ }^\circ\text{C}$, and is composed of pure A, with $F_{A0} = 10 \text{ mol/min}$, and $C_{A0} = 3 \text{ mol/m}^3$. Heat capacity data: A = 530, B = 120 J/mol.K. Heat of reaction = -55 kJ/mol. Activation energy = 52 kJ/mol.K.

Solve for X and T, when $X_{EB} = X_{MB}$, using Polymath. Show your derivations.