KSU – Chemical Engineering Department
ChE 320 (Chemical Reactor Engineering) – TUT #9
Name: **ID:** **SN:**

1. The catalytic reaction A + C → D, can be adequately described by the following mechanism:
   A ↔ B (with k_1 = forward rate constant, k_{-1} = backward rate constant)
   B + C → D (with rate constant k_2)
   Use the quazi (pseudo) steady state approach to find the rate of formation of D.

2. Consider the following liquid phase catalytic reaction: A + B → C. The reaction has been found to follow the mechanism:
   A + D → AD (very fast)
   AD + B → BAD
   BAD → D + C (very fast)
   The rate of reaction is given by: $-r_A = kC_AC_{AD}$ (mol/m^3.s).
   C_{A0} = 60 mol/m^3, C_{D0} = 30 mol/m^3, k = 2.5*10^{-5} m^3/mol.s
   Calculate the rate for this reaction at 60% conversion of A.