Parameter Values for Reactor Problem

V	=	0.01	m^3
C_{A0}	=	1	$kgmol/m^3$
ρ	=	900	kg/m^3
C_p	=	1	$kJ/kg/K$
$(-\Delta H_1)$	=	$4.18\text{x}10^4$	$kJ/kgmole$
$(-\Delta H_2)$	=	$8.36\text{x}10^4$	$kJ/kgmole$
$(-\Delta H_3)$	=	$6.25\text{x}10^4$	$kJ/kgmole$
T_0	=	170	^oC
k_{10}	=	100	s^{-1}
k_{20}	=	150	s^{-1}
k_{30}	=	1.1	$m^3/(kgmole)/s$
E_1	=	$3.09\text{x}10^4$	$kJ/Kgmole/K$
E_2	=	$4.18\text{x}10^4$	$kJ/Kgmole/K$
E_3	=	$2.10\text{x}10^4$	$kJ/Kgmole/K$

- The rate constants, k_i are related to temperature by:

$$k_i = k_{i0} exp\left(-\frac{E_i}{RT}\right)$$

- There are 3 reactions occurring in the CSTR. The associated heats of reaction are given in the table below:

	reaction	heat of reaction
1	$A \rightarrow B$	$(-\Delta H_1)$
2	$B \rightarrow C$	$(-\Delta H_2)$
3	$2A \rightarrow D$	$(-\Delta H_3)$

- The reactions are exothermic as you can tell from the values of the heats of reaction. Thus Q will be a negative value.

Steady State Values of Inputs

F_s	=	$8.5\text{x}10^{-5}$	m^3/s
Q_s	=	-8	kJ/s