Thermo Quiz 8

1.)

2 kmol N_2	2 kmol air @	1 mol O_2
293K	293	

2.) $\dfrac{2\,000}{3\,000} = \dfrac{2}{3}$

3.) $\Delta u = \cancel{Q} + \cancel{w}_{EC} + w_s = 0$

$\Delta S_{mix} = -R \sum y_i \ln y_i$

4.)

5.) $T_c = 274K \qquad T_H = 295K$

$w_{s,net} = 5kW$

$\dfrac{T_c}{T_H - T_c} = COP_{R,rev}$

$Q_c + w_{s,net} = Q_H \qquad\qquad COP = \dfrac{Q_c}{w_s}$

$5 = Q_c + w_{s,net} \qquad\qquad Q_c =$

$Q_c = 5 - w_{s,net} \qquad\qquad COP = \dfrac{5 - w_{s,net}}{w_s}$

$COP \cdot w_s = 5 - w_s$
$w_s (COP + 1) = 5$

$5kW = Q_c \qquad \therefore COP = \dfrac{5}{w_s}$