

Figure 9-3: Flow chart for Problem 9.5.

Fig 9-4

- b) Calculate the work in the turbine, and the heat load in the heat exchanger.
 c) Calculate the entropy generation.
 d) Calculate the ideal work and the lost work for the process.

Additional data: Assume the components of their mixtures to be at the ideal-gas state at all pressures and temperatures of this problem with ideal-heat capacities, $C_{PA} = 44.7 \text{ J/mol K}$, $C_{PB} = 31.1 \text{ J/mol K}$.

Problem 9.7: A reservoir contains natural gas at a pressure of 5000 psig and a temperature of 180 °F. The composition of the gas is 80% methane, 15% ethane, and 5% CO₂ (all fractions are by mole). Estimate the temperature of the gas when it emerges at the surface under the following alternative assumptions:

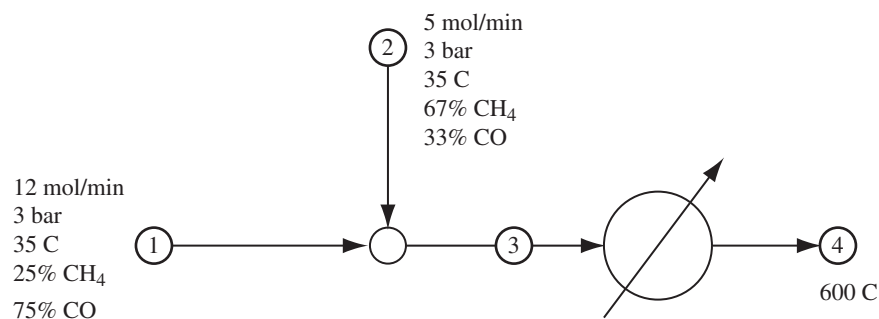


Figure 9-4: Flow chart for Problem 9.6.

Fig 9-3