

Answer Sheets for CHE654 Homework Set #3 (100 Points)

Note: For all problems, submit a copy of your process flow diagram and a copy of your input summary of the process.

21. Using ASPEN PLUS to Perform Simple Calculations (25 points)

(a) Solubility (mol%) of *n*-butanol in water = _____ mol%

(b) Answer: T = _____ °C

(c) The total number of possible pairs of binary interaction parameters = _____
ASPEN PLUS retrieves _____ pairs from its databanks

The missing pair(s) is/are: _____

The required temperature to vaporize 20% of the mixture at 1 atm = _____ °C

Split fraction = _____; Flash-2 temperature = _____ °C

22. Simulating Ammonia Production Process with ASPEN PLUS (20 points)

(a) Recycle flow rate = _____ lbmol/hr

Ammonia mass fraction in the purge stream = _____

(b) % conversion of Haber reaction at various process feed temperatures:

Feed Temp (°F)	% Conversion
250 °F	
300 °F	
350 °F	

23. Simulating an Acetic-Anhydride Production Process (30 points)

(a) (i) Calculated reactor length = _____ m

(ii) Cooling water needed = _____ gmole/min

(b) Mole fraction of acetic-anhydride in the HP-Column bottom stream = _____

(c) Fractional conversion based on ketene = _____

(d) Mole fraction of acetic-anhydride in the HP-Column bottom stream = _____

26. Solving a Highly Constrained Isobutene Production Problem with A+ (25 points)

Required isobutane feed = _____ lbmol/hr

Required propane refrigerant = _____ lbmol/hr