

Answer Sheet for CHE494 Homework Set #1 (100 points)

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

1. (10 points) *Degree of Freedom Analysis*

Answer the following questions:

Number of missing standard input = _____

Number of constraints = _____

Check one: The problem is: under-specified fully specified over-specified

2. (20 points) *Solving a Mass Balance Problem with Standard Input, I*

Complete the following table:

Streams	Component Flow Rates (lbmol/hr)				Total Flow
	A	B	C	D	
S1	60	40	0	0	100.000
S2					
S3					
S4					
S5					

4. (30 points) *Solving a Mass Balances Problem with Design Targets, I*

Complete the following table:

Streams	Component Flow Rates (lbmol/hr)				Total Flow
	A	B	C	D	

S1			0	0	
S2					
S3					
S4					
S5					

Fractional conversion based on H₂ in Reactor 1 = _____

%Mole-recovery of *i*-butane in Stream S4 = _____

5. (40 points) Solving a Mass Balances Problem with Design Targets, II

Is the problem constrained? Circle one: Yes or No

The number of constraints = _____

The constraints are:

The problem is: Circle one: under-specified, fully specified, or over-specified

Complete the following table:

lbmol/hr	S1	S2	S3	S4	S5	S6	S7
<i>A</i>							
<i>B</i>							
<i>C</i>	0						
Total							