

**Answer Sheet for CHE654 Homework Set #6
(100 Points)**

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

45. (25 points) Flowsheet Convergence, II

(a) Scheme 1: Tear streams: _____

Your convergence algorithm: _____

Scheme 2: Tear streams: _____

Your convergence algorithm: _____

Total flow rate of Stream 6 = _____ lbmol/hr

Mole fraction of benzene in Stream 4 = _____

Mole fraction of *n*-butane in Stream 7 = _____

(b) **Your convergence scheme 1:** (Be very specific with your answer, e.g. what algorithms were used to converge tear streams and design-specs and whether the convergence was simultaneous or nesting, and if nesting what was the order of nesting.)

Your convergence scheme 2: (Be very specific with your answer, e.g. what algorithms were used to converge tear streams and design-specs and whether the convergence was simultaneous or nesting, and if nesting what was the order of nesting.)

Vapor fraction in FLASH-1 = _____ Vapor fraction in FLASH-2 = _____

(c) How did you converge the flowsheet?

48. (25 points) *Flowsheet Convergence, III*

(a) Water flow rate in Stream Feed = _____ lbmol/hr

Split fraction in Block B going to Stream 2 = _____

Simulation time in CPU seconds: _____

(b) Briefly write down your two schemes:

Scheme 1: _____

CPU seconds of Scheme 1: _____

Scheme 2: _____

CPU seconds of Scheme 2: _____

49. (25 points) *Flowsheet Convergence, VI*

(a) i) Your convergence scheme:

Tear streams: _____

Convergence algorithm: _____

ii) Ratio of the total molar flow of stream R2 to that of stream R3 = _____

(b) i) Your convergence scheme:

Tear streams: _____

Convergence algorithm for tear streams: _____

Convergence algorithm for design-spec: _____

Nesting or simultaneous convergence? _____

If nesting, the nesting order: _____

ii) Vapor fraction in Flash-3 = _____

50. (25 points) Flowsheet Convergence, VII

(a)

Tear streams: _____

The best convergence algorithm: _____

Your reasons: _____

(b) **Your convergence scheme:** (Be very specific with your answer, e.g. what algorithms were used to converge tear stream and design-specs and whether the convergence was simultaneous or nesting, and if nesting what was the order of nesting.)

Split fraction of *n*-hexane in SEP-1 going to Stream 12 = _____

Total molar flow of Stream 1 = _____ lbmol/hr

(c) Propose a second convergence scheme that will converge this flowsheet. Note that using different values of limits for the two manipulated variables does not count as a different scheme.
