

## Answer Sheet for CHE654 Homework Set #2 (100 Points)

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

### 15. Simulation of a Butane Isomerization Process (40 points)

Answer the following questions:

(a) The flowrate and purity of isobutane of the product stream:

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(b) Reflux ratio and feed tray location of the distillation units:

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Utility requirements: \_\_\_\_\_

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Heat transfer areas for heat exchangers: \_\_\_\_\_

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(c) Exception property and model used:

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(d) Parameter name? \_\_\_\_\_ Symmetric or asymmetric? \_\_\_\_\_

Binary databanks searched? \_\_\_\_\_

Data source? \_\_\_\_\_

Total number of component pairs? \_\_\_\_\_

Component pairs whose values were not retrieved (missing): \_\_\_\_\_

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(e) Any tear streams? \_\_\_\_\_ = If so, minimum number of tear streams? \_\_\_\_\_

Tear stream locations? \_\_\_\_\_

Computation order? \_\_\_\_\_

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(f) Total number of iterations for the tear stream? \_\_\_\_\_

Variables being converged? \_\_\_\_\_

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Initial guess for the variables in tear stream(s)? \_\_\_\_\_

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Suggestion to reduce simulation time or number of iterations?

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**17. Simulating Isobutene Production with ASPEN PLUS (30 points)**

Answer the following questions:

Flow rate of isobutene product stream = \_\_\_\_\_ lbmol/hr

Purity of isobutene in the product stream = \_\_\_\_\_ mol%

**20. Simulating an *n*-Octane Production Process with ASPEN PLUS (30 points)**

Answer the following questions:

Flash temperature = \_\_\_\_\_ °C

Purity of low-grade *n*-octane (%mole) = \_\_\_\_\_ %

Purity of high-grade *n*-octane (%mole) = \_\_\_\_\_ %