CADET _____ SECTION _____ TIME OF DEPARTURE _____

DEPARTMENT OF CHEMISTRY & LIFE SCIENCE

CH365 2022-2023
Lesson 39 Bonus
2 December 2022

TEXT: Smith, Van Ness, & Abbott
SCOPE: Lesson 39
SUGGESTED TIME: 90 Minutes

References Permitted: Open notes, book, internet, CHEMCAD, Mathematica, Excel.

INSTRUCTIONS

1. This is a BONUS exercise and is due **1630 12 December 2022**.
2. There are 2 problems on one page (not including the cover page).
3. Save your Mathematica file and a pdf file with a signed cover page in SharePoint.
4. Group work is authorized with documentation, but submissions are individual.
4. Email the instructor when your submission is complete.

(TOTAL WEIGHT: 40 POINTS)

DO NOT WRITE IN THIS SPACE

PROBLEM	VALUE	ADD
A	30	
B	10	
TOTAL BONUS	40	

Cadet:_____

Problem:	Weight:
A	30

Construct a program in Mathematica that uses a while loop to solve Example Problem 2 part (b) from lesson 39. The problem is re-stated below.

Suggestions for programming loops are while, for, and table. Use the help menu in Mathematica and google searching to find out how to program a loop.

Lesson 39 Example Problem 2:

A liquid stream containing 0.35 mole fraction acetone and 0.65 mole fraction methanol is flashed at 2 bar so that 50% of the liquid is evaporated.

a) Calculate the flash temperature and the compositions of the resulting liquid and vapor, assuming the system follows Raoult's Law.

b) Calculate the flash temperature and the compositions of the resulting liquid and vapor, assuming activity coefficients for the liquid phase can be obtained from the Margules equations.

Problem:	Weight:
B	10

Verify your solution to Problem A in CHEMCAD. (Note: Since this is a verification, points will not be awarded without a solution to Problem A, but points can potentially be awarded even if your solution to Problem A is incorrect.)