CADET _____ SECTION _____TIME OF DEPARTURE _____

DEPARTMENT OF CHEMICAL & BIOLOGICAL SCIENCES & ENGINEERING

CH365 2025-2026
Beer Day Bonus
28 September 2025

TEXT: Smith, Van Ness, Abbott & Swihart
SCOPE: Lessons 10-15
TIME: ~60-120 minutes

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

INSTRUCTIONS

1. This is a BONUS exercise and is due **Sunday 2359 28 September 2025**.
2. There are 2 problems on 1 page in this exercise (not including the cover page).
3. Upload all electronic work and cover page as a single pdf to CANVAS.

(TOTAL WEIGHT: 30 POINTS)

DO NOT WRITE IN THIS SPACE

PROBLEM	VALUE	BONUS
A	10	
B	10	
LINK	10	
TOTAL BONUS	30	

Cadet:_____

Problem:	Weight:
A	10

Table I in the provided reference paper contains experimentally measured pressures of xenon gas as a function of temperature and molar density. The paper is found in CANVAS. Calculated values of pressure are indirectly shown in the same table as deviations from the measurements. The calculations were performed with the Beattie-Bridgeman equation of state, which is presented in Table II in the paper along with the constants used in the equation.

The assignment is to repeat the calculations in the table using the Beattie-Bridgeman equation. A spreadsheet accompanies this handout with the experimental values typed in, in the same format at Table I. Complete the green-shaded cells in the spreadsheet.

Problem:	Weight:
B	10

Calculate the average deviation, average percent deviation, total average deviation, and total average percent deviation for your results. Complete the yellow-shaded cells in the accompanying spreadsheet.

Problem:	Weight:
LINK	10

10 bonus points will be awarded to those cadets who successfully use Mathematica Link for Excel to complete the green "calc" cells in the spreadsheet.

There are sufficient resources available in CANVAS to help you do this. The Mathematica Link for Excel (MLE) setup file can be found in CANVAS Resources, and there are two videos explaining how to use MLE in the CANVAS Assignment. You should study both videos before attempting this part of the assignment.

The entire 30 points will be awarded for writing a spreadsheet that correctly calls the functions from Mathematica. You do not need to do a stand-alone Excel solution.

For example, a cadet who completes both problems A and B in Excel without Mathematica will receive 20 points. A cadet who completes problem A in Mathematica with MLE and who also complete problem B in Excel will receive 30 points.