

CADET \_\_\_\_\_ SECTION \_\_\_\_\_ TIME OF DEPARTURE \_\_\_\_\_

DEPARTMENT OF CHEMISTRY & LIFE SCIENCE

CH365 AY2025-2026 - SIS QUIZ

60 Points

18 August 2025

TEXT: Intro. to Chem. Eng. Thermo.

SCOPE: Standing Instr. for Students (SIS)

References Permitted: Standing Instructions for Students (SIS) only.

**INSTRUCTIONS**

1. Complete the quiz before 2359 on 18August 2025. There is no time limit.
2. Solve the problems in the space provided. Show all work to receive credit.
3. There are 12 problems on 2 pages in this quiz, not counting the cover sheet.
4. Answer all questions and submit the completed quiz in CANVAS.

(TOTAL WEIGHT: 60 POINTS)

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DO NOT WRITE IN THIS SPACE

| PROBLEM   | VALUE | CUT |
|-----------|-------|-----|
| 1         | 5     |     |
| 2         | 5     |     |
| 3         | 5     |     |
| 4         | 5     |     |
| 5         | 5     |     |
| 6         | 5     |     |
| 7         | 5     |     |
| 8         | 5     |     |
| 9         | 5     |     |
| 10        | 5     |     |
| 11        | 5     |     |
| 12        | 5     |     |
| TOTAL CUT |       |     |
| GRADE     | 60    |     |

Cadet: \_\_\_\_\_

1. In what two ways does a thermodynamic analysis augment chemical reactor design?
  
  
  
  
  
  
  
  
  
  
2. In what way does a thermodynamic analysis enable distillation design?
  
  
  
  
  
  
  
  
  
  
3. Give two definitions of entropy.
  
  
  
  
  
  
  
  
  
  
4. (True or False. If false, explain why.) All assignments in CH365 require a cover sheet.
  
  
  
  
  
  
  
  
  
  
5. (True or False. If false, explain why.) I must purchase a textbook for this course.
  
  
  
  
  
  
  
  
  
  
6. (Yes or No) Cadet Jenkins needs AI but the only time he has is Tuesday at 0930. Can he get AI at that time? Are there any constraints on instructor availability at that time? Explain.
  
  
  
  
  
  
  
  
  
  
7. In what manner can personal laptops be used on WPRs?

Cadet: \_\_\_\_\_

The following applies to Questions 8-11: A problem set with ten problems is due on a Friday at 2359. Use the rubric and the resubmission policy to compute the scores.

8. Cadet Curran submitted five out of ten of the problems on time and five problems were submitted separately at 0705 on Saturday morning. Of the five on-time problems, one was perfect and four had minor errors. Of the five late problems, one had minor errors, three were perfect, and one showed an answer with no work. Compute his score before resubmission.

9. Cadet Curran's grade was posted on Sunday at 0700, so he resubmitted the entire problem set Monday at 1600. All problems were perfect, errors were identified, and corrections explained. Determine his new score after resubmission.

10. Cadet Cargle's grade was posted on Sunday and she received a grade of 40/100 (minor mistakes in all 10 problems). She resubmitted the entire assignment Monday at 1605. All problems were resubmitted perfectly with all the work shown, but she failed to identify her mistakes and how she repaired them. Determine her new score after resubmission.

11. Cadet Halsey submitted all ten problems on Saturday at 0001, answers were all perfect, and detailed work was provided. Determine her score.

12. Calculate the total heat (in J) required to raise the temperature of 125 g of water from  $-10\text{ }^{\circ}\text{C}$  to  $90\text{ }^{\circ}\text{C}$  at constant pressure of 1 atm (101.3 kPa). Use  $q = m \cdot C \cdot \Delta T$  to calculate the heat associated with any temperature changes. Use  $q = n \cdot \Delta H_{\text{fus}}^{\circ}$  (where  $n$  is the number of moles) to calculate the heat of fusion of water  $q$ . The specific heat capacity solid water is  $2.09\text{ J/g}\cdot\text{K}$ , liquid water is  $4.18\text{ J/g}\cdot\text{K}$ , and  $\Delta H_{\text{fus}}^{\circ}$  of water is  $6.09\text{ kJ/mol}$ . Finally, add all of the heats to determine the total change in enthalpy.