

Name (Last, First): \_\_\_\_\_

PID: \_\_\_\_\_

Instructor:  Bliem       Curtis       Dempsey       Fostvedt

Exam Classroom: \_\_\_\_\_

## General Descriptive Chemistry 101 Exam I

DO NOT OPEN OR WRITE ANYTHING UNTIL INSTRUCTED TO DO SO

### Instructions:

1. Write your name and PID (e.g., 731234567) above.
2. Write your PID at the top of each page.
3. Read each question carefully.
4. Multiple-choice/many-select questions can be answered in pencil.
5. For many-select questions, mark "x" in boxes  (please no stray marks).
6. All other questions must be written in pen.
7. **SHOW YOUR WORK** with correct units and sig figs. Partial credit based on work shown.
8. Use the periodic table.
9. Double-check your calculations.
10. **ANSWERS MUST BE PLACED IN THE BOXES or LINES** (including CORRECT UNITS and sig figs).
11. Do not leave any answers blank.
12. **Read and sign the honor pledge when, and only when, you finish taking the exam.**
13. **As part of the Honor Code, you may not discuss contents of this exam with peers until it is returned to you.**
14. Return *all* pages when you complete the exam.
15. Relax. You've got this.

Honor Pledge: By signing below, I pledge that I have not violated the UNC Honor Code by receiving or giving unauthorized assistance on this exam. If I do not sign, then I acknowledge that I was not honorable in taking the exam and understand that it will simply not be graded, no questions asked.

\_\_\_\_\_  
(Signature)

# 101A



**Multiple Choice: (5 pts each)**

1. A student does a calculation and the number shown on the calculator display is 280.27163. How do they report the answer to three significant figures?
  - A) 280
  - B) 281
  - C)  $2.80 \times 10^{-2}$
  - D)  $2.80 \times 10^2$
  
2. Lucy conducts repeated trials to determine the density of a sample of seawater and obtains the following results: 1.321 g/mL, 1.323 g/mL, 1.319 g/mL, and 1.321 g/mL. Known values are in the range of 1.02 to 1.09 g/mL. The experimental results are:
  - A) inaccurate but precise
  - B) accurate but not precise
  - C) both accurate and precise
  - D) neither accurate nor precise
  
3. A new element was discovered, and the following data were acquired:
  - Mass spectrum shows peaks at 371 u, 372 u, and 380 u
  - The heaviest isotope is ~ 80% abundant in nature
  - The element has atomic number 170Based on this information, what can you correctly infer about this new element?
  - A) It has more protons in the 380 u isotope than the 371 u isotope.
  - B) It has an average atomic mass between 371 u and 372 u.
  - C) The heaviest isotope has the greatest number of neutrons.
  - D) The three isotopes differ by the number of electrons.
  
4. A sample of vitamin A,  $C_{20}H_{30}O$ , contains  $4.0 \times 10^{24}$  atoms of carbon. How many moles of vitamin A does it represent?
  - A)  $1.2 \times 10^{47}$  moles
  - B) 6.6 moles
  - C) 13 moles
  - D) 0.33 moles