

CHEMISTRY 202
Practice Hour Exam I
Fall 2023
Dr. D. DeCoste

Name _____

Signature _____

T.A. _____

This exam contains 23 questions on 10 numbered pages. Check now to make sure you have a complete exam. You have two hours to complete the exam. Determine the **best** answer to the first 20 questions and enter these on the special answer sheet. Also, **circle your responses** in this exam booklet.

Show all of your work and provide complete answers to questions 21, 22 and 23.

1-20	(60 pts.)	_____
21	(20 pts.)	_____
22	(20 pts)	_____
23	(20 pts.)	_____
Total	(120 pts)	_____

Useful Information:

Always assume ideal behavior for gases (unless explicitly told otherwise).

$$PV = nRT$$

$$R = 0.08206 \text{ Latm/molK} = 8.3145 \text{ J/Kmol}$$

$$K = ^\circ\text{C} + 273$$

$$N_A = 6.022 \times 10^{23}$$

$$u_{\text{rms}} = \sqrt{\frac{3RT}{M}}$$

$$\lambda = \frac{1}{\sqrt{2}(N/V)(\pi d^2)}$$

$$Z_A = A \frac{N}{V} \sqrt{\frac{RT}{2\pi M}}$$

$$Z = 4 \frac{N}{V} d^2 \sqrt{\frac{\pi RT}{M}}$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Solubility Rules:

1. Most nitrate salts are soluble.
2. Most salts of sodium, potassium, and ammonium cations are soluble.
3. Most chloride salts are soluble. Exceptions: silver, lead(II), and mercury(I) chloride.
4. Most sulfate salts are soluble. Exceptions: calcium, barium, and lead (II) sulfate.
5. Most hydroxide salts can be considered insoluble. Soluble ones: sodium, potassium, and calcium hydroxide.
6. Consider sulfide, carbonate, and phosphate salts to be insoluble.