

Chem 105 Exam 5

This exam is due Monday April 24th at 8:00 AM. **Late work will NOT be accepted.**

If you worked with anyone, please list their names below:

Your name _____ Partner _____

By signing here, I certify that the work here is reflective of the work done by me and my group, which is listed above. I did not receive help from resources that are not part of this course.

You must sign to receive credit for this exam.

Signature _____

Date _____

Signature _____

Date _____

1. What is the difference between a strong acid and a weak acid?
2. What does the term “conjugate base” mean?
3. What is a base dissociation reaction?
4. An acid has a pKa of 6.75. Determine each of the following:
 - a. K_a
 - b. pKb of the conjugate base
 - c. K_b of the conjugate base
5. Calculate the pH and pOH of 22.81 μM acetic acid.

pH = _____

pOH = _____

6. Consider each of the following solution. Rank them by increasing acidity (most acidic will be last)

| | | | | | |
|------------------------|-------------------------|------------------------|--------------------------------------|------------------------|------------|
| 10 mM HNO ₂ | 10 mM NaNO ₂ | 10 mM HNO ₃ | 10 mM H ₂ SO ₄ | 10 μM HNO ₂ | 10 mM NaOH |
|------------------------|-------------------------|------------------------|--------------------------------------|------------------------|------------|

7. Calculate the pH of a 50 mL solution of 1.82 mM weak base that has a pK_a of 8.13.

8. What concentration of benzoic acid is needed to have a solution with a pH of 5.91?

9. What concentration of magnesium hydroxide is needed to have a solution with a pH of 8.91?

10. Consider a 600 mL solution that contains 280 mM ammonia and 65 mM ammonium.

a. What is the pH of this solution?

b. Calculate the pH if 3.4 mL of 1.5 M NaOH is added.