Show all work to receive credit

1. (2 Pts). Label the acid, base, conjugate acid and conjugate base in n the following reaction

 $HCO_3^-(aq) + NH_3(aq) \rightleftharpoons CO_3^{2-}(aq) + NH_4^+(aq)$

- 2. (2 Pts) What is the conjugate acid of HPO₄²-(aq)?
- 3. (4 Pts) A solution is prepared by diluting 0.25 mol HNO₃ to a volume of 750 mL. What is the pH of this solution?
- 4. (3 Pts) At 298 K, what is the H_3O^+ concentration of a solution with a OH $^-$ concentration of 2.88×10^{-2} M?
- 5. (4 Pts) What is the pH of 1.3×10^{-5} M NaOH at 25°C?
- 6. (5 Pts) Benzoic acid has a p K_a value of 4.20. Determine the pH of a 0.075 M benzoic acid solution.

7. (5 Pts) The K_b of trimethylamine [$(CH_3)_3N$] is 6.2 x 10^{-5} . Determine the pH of a 0.075 M trimethylamine solution.

CHM152 Quiz 4a 25 Pts Spring 2011

Name:

Show all work to receive credit

1. (2 Pts). Label the acid, base, conjugate acid and conjugate base in n the following reaction

+ $NH_3(aq) \rightleftharpoons CO_3^2(aq) + NH_4^+(aq)$ Base C-BASE C-acid $HCO_3(aq)$ Acid

- What is the conjugate acid of HPO_4^2 -(aq)? $H_2 PO_4$ 2. (2 Pts)
- 3. (4 Pts) A solution is prepared by diluting 0.25 mol HNO₃ to a volume of 750 mL. What is the pH of this solution?

HNO3 IS a strong acid: HNO1+ H20 > 11307 NO3 [HNO3] = (0.25mol) = 0.33 = [Hgot] (PH = 0.477)

4. (3 Pts) At 298 K, what is the H_3O^+ concentration of a solution with a OH⁻ concentration of 2.88×10^{-2} M?

[H3 0+][OH] = 10-14 [H30+) = 10-14 = 3.47 ×10-13

5. (4 Pts) What is the pH of 1.3×10^{-5} M NaOH at 25°C?

Strong Base: NaOHWIDS Nat+OH-POA = - Log [1.3 × 10-5] = 4,886 (PH=14-POH = 9.11)

6. (5 Pts) Benzoic acid has a pK_a value of 4.20. Determine the pH_a of a 0.075 M benzoic acid solution.

(5 Pts) Benzoic acid has a p K_a value of 4.20. Determine the pri of a 0.073 ivi benzoic acid solution.

(a) $K_a = 0.075 \times 10^{-5} \times$

7. (5 Pts) The K_b of trimethylamine [(CH₃)₃N] is 6.2 x 10⁻⁵. Determine the pH of a 0.075 M trimethylamine solution.

wk base: