**Dougherty Valley HS AP Chemistry**

**WORKSHEET #9**

**Acid Base – Study Questions Reactions of Acids and Bases**

**Name: Date: Period: Seat #:**

Show all work for each question, box your final answer

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| [1] Calculate the equilibrium constant, Kneut for the neutralization of hydrocyanic acid by ammonia: 0.72  **HCN(aq) + NH3(aq) ⇔ NH4+(aq) + CN−(aq)**  Ka for hydrocyanic acid = 4.0 x 10-10 at 25°C, Kb for ammonia = 1.8 x 10-5 at 25°C |

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| [2] If exactly 50 mL of a 0.050M solution of hydrochloric acid is added to exactly 50 mL of 0.050M ammonia, what is the pH of the resulting solution? 5.43 |

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| [5a] What is the pH of 100 mL of pure water at 25° C? 7.0 |
| [b] What would the pH of this 100 mL water sample be if 0.10 mL of 12M HCl was added to it? (Assume the volume doesn’t change). 1.92 |
| [c] Calculate the pH of a buffer solution composed of 0.20M ammonia and 0.20M ammonium chloride. 9.26 |
| [d] Calculate the pH of 100 mL of this buffer solution if 0.10mL of 12M hydrochloric acid is added to it. (Assume the volume doesn’t change). 1.8E9 |

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| [6] A solution contains KH2PO4 and K2HPO4 and has a pH of 7.10. What is the mole ratio of K2HPO4 to KH2PO4? 0.776:1 |