

Answer Key: Acid-Base Equilibria: Buffer Problems

1. a)
2. b)
3. b)
4. a)
5. a)
6. Increase the ratio between the salt and acid to 10:1.
7. $\text{pH} = 4.27$
8. $\text{pH} = 7.19$
9. $\text{pH} = 4.30$
10. $\text{pH} = 6.58$
11. 0.18 (CH_3COONa) : 1 (CH_3COOH) or 5.5 (CH_3COOH) : 1 (CH_3COONa)
12. a) $\text{pK}_a = 4.20$ b) $\text{pH} = 4.23$ (4.11)
13. $\text{pH} = 10.2$
14. Yes, 1.43 (HCOONa) : 1 (HCOOH)
15. 0.65 M
16. 1.56 (Na_2PO_4) : 1 (H_2PO_4)
17. $\text{pH} = 10.5$ Needs K_b ($1.8 * 10^{-5}$)
18. $\text{pH} = 4.35$
19. 0.427 ($\text{CH}_3\text{CH}_2\text{COONa}$) : 1 ($\text{CH}_3\text{CH}_2\text{COOH}$)
20. 5.370 (NaHCO_3) : 1 (H_2CO_3) Needs K_a ($4.3 * 10^{-7}$)
21. $\text{pH} = 3.53$
22. $\text{pH} = 9.33$