Chemistry 12 – Unit 4   *Acids & Bases*

<div align="center">

Chemistry 12

KEY – ACID & BASE EQUILIBRIUM CONSTANTS

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31. (a) $K_a = \dfrac{[H_3O^+][CN^-]}{[HCN]}$ (b) $K_a = \dfrac{[H_3O^+][PO_4^{3-}]}{[HPO_4^{2-}]}$ (c) $K_a = \dfrac{[H_3O^+][NO_2^-]}{[HNO_2]}$

32. (a) $K_b = \dfrac{[H_2S][OH^-]}{[HS^-]}$ (b) $K_b = \dfrac{[CH_3NH_3^+][OH^-]}{[CH_3NH_2]}$ (c) $K_b = \dfrac{[HF][OH^-]}{[F^-]}$

33. the acid having $K_a = 1 \times 10^{-5}$

34. the base having $K_b = 7 \times 10^{-6}$

35. (a) 8.3×10^{-13} (b) 7.1×10^{-10} (c) 2.3×10^{-8} (d) 1.6×10^{-7} (e) 6.7×10^{-13} (f) 1.1×10

36. 5.9×10^{-9}

37. Since the problem gives a K_b value, the substance must be a weak base (even if the substan
amphiprotic it still acts as a weak base rather than a strong base).