MEGA LECTURE

Topic 12 Exercise 2 – pH calculations

1. Calculate the pH of the following solutions:

a) 0.001 moldm^{-3} HCl
b) 0.002 moldm^{-3} KOH
c) 0.10 moldm^{-3} C_6H_5COOH (K_a of benzoic acid = 6.3 x 10^{-5} moldm^{-3})
d) 0.30 moldm^{-3} NH_4Br (K_a of NH_4^+ = 5.6 x 10^{-10} moldm^{-3})
e) 0.05 moldm^{-3} $NaHSO_4$ (K_a of HSO_4^- = 1.0 x 10^{-2} moldm^{-3})
f) 0.02 moldm^{-3} $Ba(OH)_2$.

2. Calculate the molarity of the following solutions:

a) HCl , pH = 3.
b) HCOOH (K_a = 1.6 x 10^{-4} moldm^{-3}), pH = 3.
c) NaOH, pH = 11.

3. The pH of a 0.10 moldm^{-3} solution of a weak monoprotic acid, HA is 2.85. Determine the K_a of the acid

4. A 500 cm^3 solution containing 1.9g of a weak acid HA has a pH of 3.5. Calculate the molar mass of the acid, given that it has a K_a of 3.0 x 10^{-6} moldm^{-3}.