

## Answer on Question #39040-Chemistry-Organic Chemistry

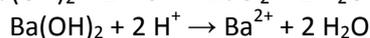
### Questions

(a) What is the molarity of a 0.050 N solution of Ba(OH)<sub>2</sub> (calculated on the basis of complete neutralization of the alkali)?

(b) What is the normality of a 0.050 M H<sub>3</sub>PO<sub>4</sub> (based on neutralization of the acid to the HPO<sub>4</sub><sup>2-</sup> ion)?

### Solution

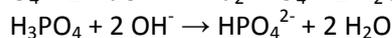
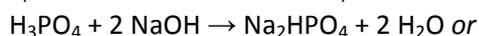
(a) Chemical equation of complete neutralization of Ba(OH)<sub>2</sub>:



Since 2 mol of H<sup>+</sup> are needed to neutralize one mole of Ba(OH)<sub>2</sub>, the equivalence factor for Ba(OH)<sub>2</sub> in this reaction  $f_{eq} = 1/2$ . Molarity of the solution:

$$C_M = C_N \cdot f_{eq} = 0.050 \cdot 0.500 = 0.025 \text{ M}$$

(b) Chemical equation of H<sub>3</sub>PO<sub>4</sub> neutralization to the HPO<sub>4</sub><sup>2-</sup> ion:



Since 2 mol of OH<sup>-</sup> are needed to neutralize one mole of H<sub>3</sub>PO<sub>4</sub> to the HPO<sub>4</sub><sup>2-</sup> ion, the equivalence factor for H<sub>3</sub>PO<sub>4</sub> in this reaction  $f_{eq} = 1/2$ . Normality of the solution:

$$C_N = \frac{C_M}{f_{eq}} = \frac{0.050}{0.500} = 0.100 \text{ N}$$

**Answers:** (a)  $C_M = 0.025 \text{ M}$ , (b)  $C_N = 0.1000 \text{ N}$