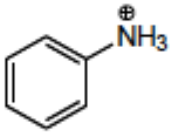
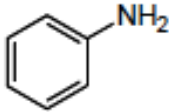
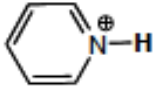
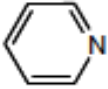
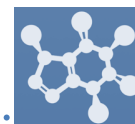
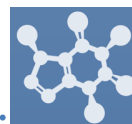


CHE 2060: Soderberg's pKa tables

<u>acid</u>	<u>pKa</u>	<u>conjugate base</u>
$\begin{array}{c} \text{O} \\ \parallel \\ \text{HO}-\text{S}-\text{OH} \\ \parallel \\ \text{O} \end{array}$ <p>sulfuric acid</p>	-10	$\begin{array}{c} \text{O} \\ \parallel \\ \text{HO}-\text{S}-\text{O}^{\ominus} \\ \parallel \\ \text{O} \end{array}$
HCl	-7	Cl ⁻
H ₃ O ⁺	-1.7	H ₂ O
$\begin{array}{c} \text{O} \\ \parallel \\ \ominus\text{O}-\text{N}^{\oplus}-\text{OH} \end{array}$ <p>nitric acid</p>	-1.4	$\begin{array}{c} \text{O} \\ \parallel \\ \ominus\text{O}-\text{N}^{\oplus}-\text{O}^{\ominus} \end{array}$
$\begin{array}{c} \text{O} \\ \parallel \\ \text{R}-\text{O}-\text{P}-\text{OH} \\ \\ \text{OH} \end{array}$	1.0 ⁽ⁱ⁾	$\begin{array}{c} \text{O} \\ \parallel \\ \text{R}-\text{O}-\text{P}-\text{O}^{\ominus} \\ \\ \text{OH} \end{array}$
$\begin{array}{c} \text{O} \\ \parallel \\ \text{HO}-\text{P}-\text{OH} \\ \\ \text{OH} \end{array}$ <p>phosphoric acid</p>	2.2 ⁽ⁱⁱ⁾	$\begin{array}{c} \text{O} \\ \parallel \\ \text{HO}-\text{P}-\text{O}^{\ominus} \\ \\ \text{OH} \end{array}$
HF	3.2	F ⁻
	4.6	
$\begin{array}{c} \text{O} \\ \parallel \\ \text{R}-\text{C}-\text{OH} \end{array}$	4-5	$\begin{array}{c} \text{O} \\ \parallel \\ \text{R}-\text{C}-\text{O}^{\ominus} \end{array}$
 <p>pyridinium</p>	5.3 ⁽ⁱⁱ⁾	 <p>pyridine</p>



<u>acid</u>	<u>pK_a</u>	<u>conjugate base</u>
$\begin{array}{c} \text{O} \\ \parallel \\ \text{HO}-\text{C}-\text{OH} \\ \text{carbonic acid} \end{array}$	6.4	$\begin{array}{c} \text{O} \\ \parallel \\ \text{HO}-\text{C}-\text{O}^{\ominus} \\ \text{bicarbonate} \end{array}$
$\begin{array}{c} \text{O} \\ \parallel \\ \text{R}-\text{O}-\text{P}-\text{O}^{\ominus} \\ \\ \text{OH} \end{array}$	6.5 ⁽ⁱ⁾	$\begin{array}{c} \text{O} \\ \parallel \\ \text{R}-\text{O}-\text{P}-\text{O}^{\ominus} \\ \\ \text{O}^{\ominus} \end{array}$
$\begin{array}{c} \text{O} \\ \parallel \\ \text{HO}-\text{P}-\text{O}^{\ominus} \\ \\ \text{OH} \end{array}$	7.2 ⁽ⁱⁱⁱ⁾	$\begin{array}{c} \text{O} \\ \parallel \\ \text{O}^{\ominus}-\text{P}-\text{O}^{\ominus} \\ \\ \text{OH} \end{array}$
$\begin{array}{c} \text{O} \quad \text{H} \quad \text{O} \\ \parallel \quad \quad \parallel \\ \text{H}_3\text{C}-\text{C}-\text{C}-\text{C}-\text{CH}_3 \\ \\ \text{H} \end{array}$	9.0	$\begin{array}{c} \text{O} \quad \text{O} \\ \parallel \quad \parallel \\ \text{H}_3\text{C}-\text{C}-\text{C}^{\ominus}-\text{C}-\text{CH}_3 \\ \\ \text{H} \end{array}$
HCN	9.2	CN ⁻
NH_4^{\oplus} ammonium	9.2	NH_3 ammonia
 phenol	9.9 ⁽ⁱⁱ⁾	 phenolate
$\begin{array}{c} \text{O} \\ \parallel \\ \text{HO}-\text{C}-\text{O}^{\ominus} \\ \text{bicarbonate} \end{array}$	10.3 ⁽ⁱⁱ⁾	$\begin{array}{c} \text{O} \\ \parallel \\ \text{O}^{\ominus}-\text{C}-\text{O}^{\ominus} \\ \text{carbonate} \end{array}$
RSH	10-11	RS ⁻
RNH ₃ ⁺	10-11	RNH ₂
$\begin{array}{c} \text{O} \\ \parallel \\ \text{O}^{\ominus}-\text{P}-\text{O}^{\ominus} \\ \\ \text{OH} \end{array}$	12.3 ⁽ⁱ⁾	$\begin{array}{c} \text{O} \\ \parallel \\ \text{O}^{\ominus}-\text{P}-\text{O}^{\ominus} \\ \\ \text{O}^{\ominus} \end{array}$
H ₂ O	15.7	OH ⁻



<u>acid</u>	<u>pK_a</u>	<u>conjugate base</u>
$\begin{array}{c} \text{O} \\ \parallel \\ \text{R}-\text{C}-\text{NH}_2 \end{array}$	17	$\begin{array}{c} \text{O} \\ \parallel \\ \text{R}-\text{C}-\text{NH}^- \end{array}$
RCH ₂ OH	16	RCH ₂ O ⁻
$\begin{array}{c} \text{O} \\ \parallel \\ \text{R}-\text{C}-\text{C}-\text{R} \\ \quad \\ \text{H} \quad \text{H} \end{array}$	19-20	$\begin{array}{c} \text{O} \\ \parallel \\ \text{R}-\text{C}-\text{C}^- - \text{R} \\ \\ \text{H} \end{array}$
RCCH terminal alkyne	25	RCC ⁻
H ₂	35	H ⁻
NH ₃ ammonia	38	NH ₂ ⁻

All pK_a values, unless otherwise noted, are taken from March, Jerry, Advanced Organic Chemistry, Fourth Edition, Wiley, New York, 1992.

⁽ⁱ⁾ Silva, J.J.R. Fraústo da, The Biological Chemistry of the Elements: the Inorganic Chemistry of Life, 2nd Edition, Oxford, New York, 2001.

⁽ⁱⁱ⁾ Lide, David R. (ed.) The CRC Handbook of Chemistry and Physics, CRC Press, Boca Raton, FL, 1995.