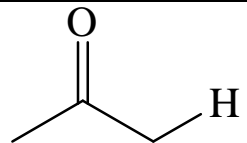
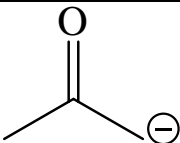
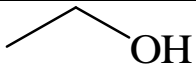
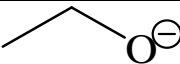
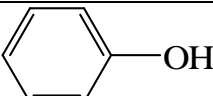
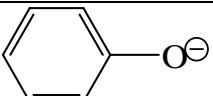
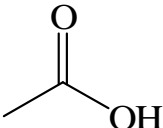
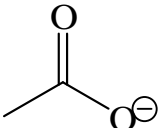
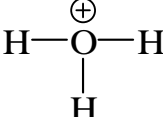


Relative Strengths of Acids & Bases: KNOW THESE!!!!

Acid	CB	Donates	pKa
$\text{H}_3\text{C}-\text{CH}_3$ Alkane C—H	$\text{H}_3\text{C}-\overset{\ominus}{\text{C}}\text{H}_2$	H^{\oplus}	51
$\text{H}_2\text{C}=\text{CH}_2$ Alkene C—H	$\text{H}_2\text{C}=\overset{\ominus}{\text{C}}\text{H}$	H^{\oplus}	44
NH_3 (or amines)	$\ominus \text{NH}_2$	H^{\oplus}	35-40 (38 for NH_3)
H_2	H^{\ominus}	H^{\oplus}	32
$\text{H}-\text{C}\equiv\text{C}-\text{H}$ Alkyne C—H	$\text{H}-\text{C}\equiv\text{C}^{\ominus}$	H^{\oplus}	25
 (sp ³ C—H adjacent to one C=O)		H^{\oplus}	20
 Alcohols		H^{\oplus}	16-18
H_2O	$\ominus \text{OH}$	H^{\oplus}	15.7
 Phenol	 Phenolate	H^{\oplus}	10
$\oplus \text{NH}_4$ or $\oplus \text{NR}_3\text{H}$	NH_3	H^{\oplus}	9.2
		H^{\oplus}	4.76 = 5
	H_2O	H^{\oplus}	-2
$\text{H}-\text{X}$ $\text{X} = \text{Cl, Br, I}$	X^{\ominus}	H^{\oplus}	-7 to -9 Cl, Br, I