Strong, Weak, or Non-Electrolyte?

For the purposes of this course, use these criteria to determine if a substance is a strong, weak, or non-electrolyte when dissolved in water (aqueous solution):

1. All ionic compounds are strong electrolytes, because they mostly break up into ions as they dissolve in water. Even insoluble ionic compounds (e.g., AgCl, $PbSO_4$, $CaCO_3$) are strong electrolytes, because the small amounts that do dissolve in water do so principally as ions; i.e., there is virtually no undissociated form of the compound in solution.

2. Molecular compounds may be non-electrolytes, weak electrolytes, or strong electrolytes, depending on whether they dissolve without ion formation, a little ion formation, or mostly ion formation, respectively. Examples:

Molecular Compound	Electrolyte Type	Species in Solution
sucrose (table sugar)	non-electrolyte	molecules only
acetic acid ($HC_2H_3O_2$ = HOAc)	weak electrolyte	molecules and some ions
hydrogen chloride (HCl)	strong electrolyte	ions only

3. Strong acids and strong bases are strong electrolytes [e.g., HCl(*aq*), H_2SO_4 (*aq*), $HClO_4$(*aq*); NaOH(*aq*)]. There are virtually no molecules of a strong acid or base in solution, only ions.

Know the strong acids and bases on the accompanying hand-out "Strong and Weak Acids and Bases". Assume that any other acid or base you encounter in this course is weak, unless told to the contrary. [Note: $Mg(OH)_2$, an insoluble compound, is a strong base because it is an ionic compound and therefore a strong electrolyte.]

Ref. Dr Carte's Website