Southern New Mexico-West Texas Chemical Olympiad Competition
Instructions for Qualitative Analysis Team Experiment

April 2\textsuperscript{nd}, 2011

Summary: Each team will be given nine dropper bottles, each containing an aqueous solution of one of the compounds listed below. The members of the team determine which solution is in each bottle by a procedure limited to mixing the solutions. (Students are not to physically touch, smell or taste the solutions). Each team is supplied with a nine well spot plate, a wash bottle and a data sheet.

Winning teams (1\textsuperscript{st}, 2\textsuperscript{nd} and 3\textsuperscript{rd} place in each of the divisions) will be selected on the basis of the time required to make the correct assignments.

Substances in unknown aqueous solutions (one per dropper bottle)

- 0.5 M MgCl\textsubscript{2}
- 0.03 M Fe(NH\textsubscript{4})\textsubscript{2}(SO\textsubscript{4})\textsubscript{2} in 0.5 M H\textsubscript{2}SO\textsubscript{4}
- 0.01 M KMnO\textsubscript{4}
- 0.5 M BaCl\textsubscript{2}
- 0.8 M K\textsubscript{2}CO\textsubscript{3}
- 1.0 M Na\textsubscript{2}SO\textsubscript{4}
- 0.1 M KSCN
- 1.0 M NaOH
- 1.0 M HNO\textsubscript{3}

Note: The compound Fe(NH\textsubscript{4})\textsubscript{2}(SO\textsubscript{4})\textsubscript{2} is iron(II) ammonium sulfate or ferrous ammonium sulfate. The iron is in the +2 oxidation state.