Qualitative Lab Report

Chemistry 1215-50

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Procedure:

20 drops of a known solution were placed into test tube #1 and 20 drops of an unknown solution were placed into test tube #1u. 10 drops of 3M HCl were added to test tubes #1 and #1u . Test tubes #1 and #1u were placed in the centrifuge. The supernatant in test tube #1 was decanted into test tube #2 and #1u into #2u. 10 drops of 6M NaOH were added to #2 and #2u until they were basic. Test tubes #2 and #2u were placed into the centrifuge. The supernatants in #2 and #2u were then decanted into test tubes #3 and #3u. 5 drops each of deionized water were added to precipitates left in test tubes #2 and #2u. HCl was added to each until it was acidic. After becoming acidic, NH_4OH was added until each solution became basic again. Test tubes #2 and #2u were placed in the centrifuge and then the supernatant was discarded. Drops of HCl were added to both test tubes #2 and #2u until the precipitate is dissolved. Once dissolved, 5 drops of 0.1M KSCN were added to each. In test tubes #3 and #3u, HCl was added until they became acidic. One drop at a time, NH_4OH was added to each tube until the solution became basic. Once basic, 3 more drops of NH_4OH were added to each. Test tubes #3 and #3u were placed in the centrifuge. Some of the remaining solution was

poured off into test tubes #4 and #4u. HCl was added to each one drop at a time until the solution became acidic. After becoming Acidic, 3 drops of $K_4Fe(CN)_6$.

Results:

The table below shows what ions were found in each solution.

Solution Table

Solutions:	Ag^+	Fe^{3+}	Cu^{2+}	Al^{3+}	Zn^{2+}
Known	Present	Present	Present	Present	Present
Unknown	Present	Not Present	Not Present	Present	Present

Discussion:

The ions that were found in the known solution compared to the unknown solution proved what ions were inside the unknown solution. This was done through identical tests. Each solution was put through the same exact tests as the other and by observing what happened to each solution and comparing it to the known, it was clear to see what ions were in the unknown. When the KSCN was added to tubes #2 and #2u and #2 turned red to indicate the presence of Fe^{3+} and #2u didn't, it was clear that Fe^{3+} was not in the unknown solution. A source of error that could've occurred in this experiment is cross contamination. If the stirring sticks that were used for each solution got mixed up or were not cleaned properly, it might've altered the results and shown an ion that wasn't there to begin with. A way to solve this would be to clearly label each stirring stick and to place it in its own specific area instead of close together.