CHEMISTRY 235 EXPERIMENT 3
QUALITATIVE ANALYSIS

METHOD AND RESULTS

You are provided with two samples labelled A and B. Each one contains one of the ions Al^{3+}, and Fe^{2+}. Perform the following tests so as to identify the ion present in each substance. Write net ionic equations wherever appropriate.

COMPOUND A

TESTS	*OBSERVATIONS*	*DEDUCTIONS*
Use a freshly prepared soln. of A in water for the tests below. Use a fresh portion for each test unless otherwise instructed.		
a) Add $NH_3(aq)$ until in excess.		
b) Add NaOH(aq) until in excess. Boil the result.		
c) Add dil. HCl then H_2S		
d) Add $CH_3COONa(aq)$ then $H_2S(aq)$		
e) Add $K_4Fe(CN)_6(aq)$. Divide the result into 2 parts i) Add $H_2O_2(aq)$ to 1 part. ii) Leave 2nd part to stand for 5 minutes.		
f) Add $K_3Fe(CN)_6(aq)$		

FBB NASC 9/9/91 C235 P2 V.1.0 1hr.

g) Add $NH_4SCN(aq)$		
h) Add butanedionedioxime (aq)[1] + ammonia soln.		
Add 1 cm^3 of conc. HNO_3 to 5 cm^3 of A(aq). Bring to boil. Use this soln. for the following tests.		
a) Add NaOH(aq) until in excess.		
b) Add NH_3 soln. until in excess.		
c) Add H_2S soln.		
d) Add $K_4Fe(CN)_6(aq)$ dropwise.		
e) Add $K_3Fe(CN)_6(aq)$ dropwise		
f) Add $NH_4SCN(aq)$		
g) Add butanedionedioxime (aq)		

[1] Also known as dimethylglyoxime, DMG.

COMPOUND B

TESTS	*OBSERVATION*	*DEDUCTION*
Use an aqueous solution of B for the following tests. Use a fresh portion for each test unless otherwise instructed.		
a) Add NaOH(aq) until in excess. Divide the result into 2 parts. i) Add NH_4Cl(aq) to 1st part. ii) Add dil. HCl to 2nd part.		
b) Add NH_4Cl(s) followed by NH_3(aq) until in excess.		
c) Add dil. HCl then H_2S(aq)		
d) Add H_2S(aq)		
e) Add Na_2CO_3(aq)		
f) Add 1 or 2 drops of litmus soln., then dil. HCl until acid (if the soln. is not already acid), then add NH_3(aq) until alkaline. Allow ppt. to settle and observe it.		

FBB NASC 9/9/91 C235 P2 V.1.0 1hr.