5.6: Solutions for Selected Problems

Exercise 5.1.1:

a) 0 b) 3- c) 3- d) 3+ e) 5+

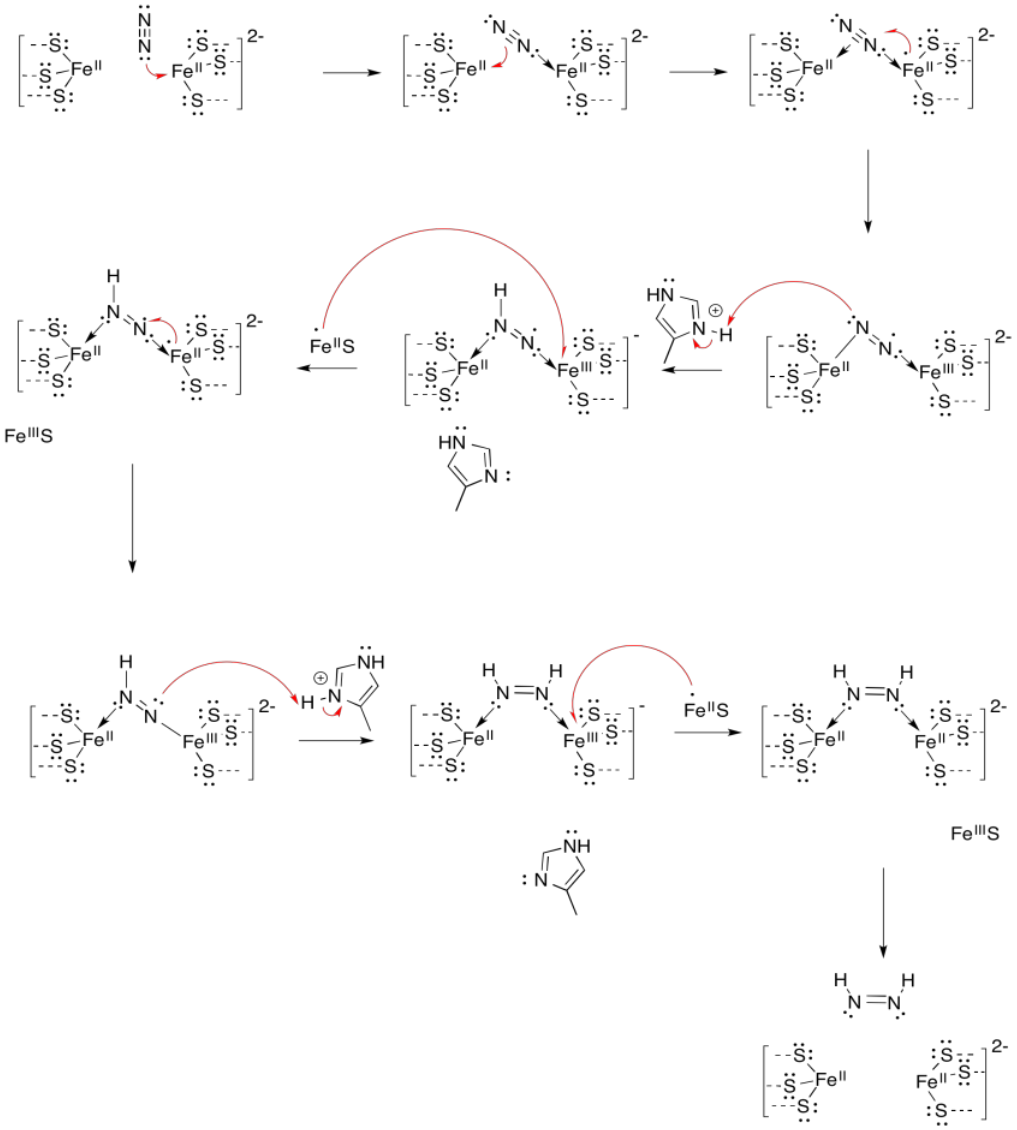
Exercise 5.1.2:

a) O_2 b) NO_2^- c) 2 e^-

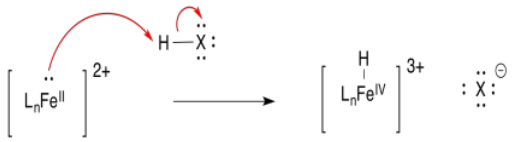
Exercise 5.3.1:

a. S: $4 \times 2^- = 8^-$; Fe: $2 \times 2^+ + 2 \times 3^+ = 10^+$; total $= 2^+$
b. S: $4 \times 2^- = 8^-$; Fe: $1 \times 2^+ + 2 \times 3^+ = 8^+$; total $= 0$
c. S: $2 \times 2^- = 4^-$; Fe: $2^+ + 2^+ = 5^+$; total $= 1^+$

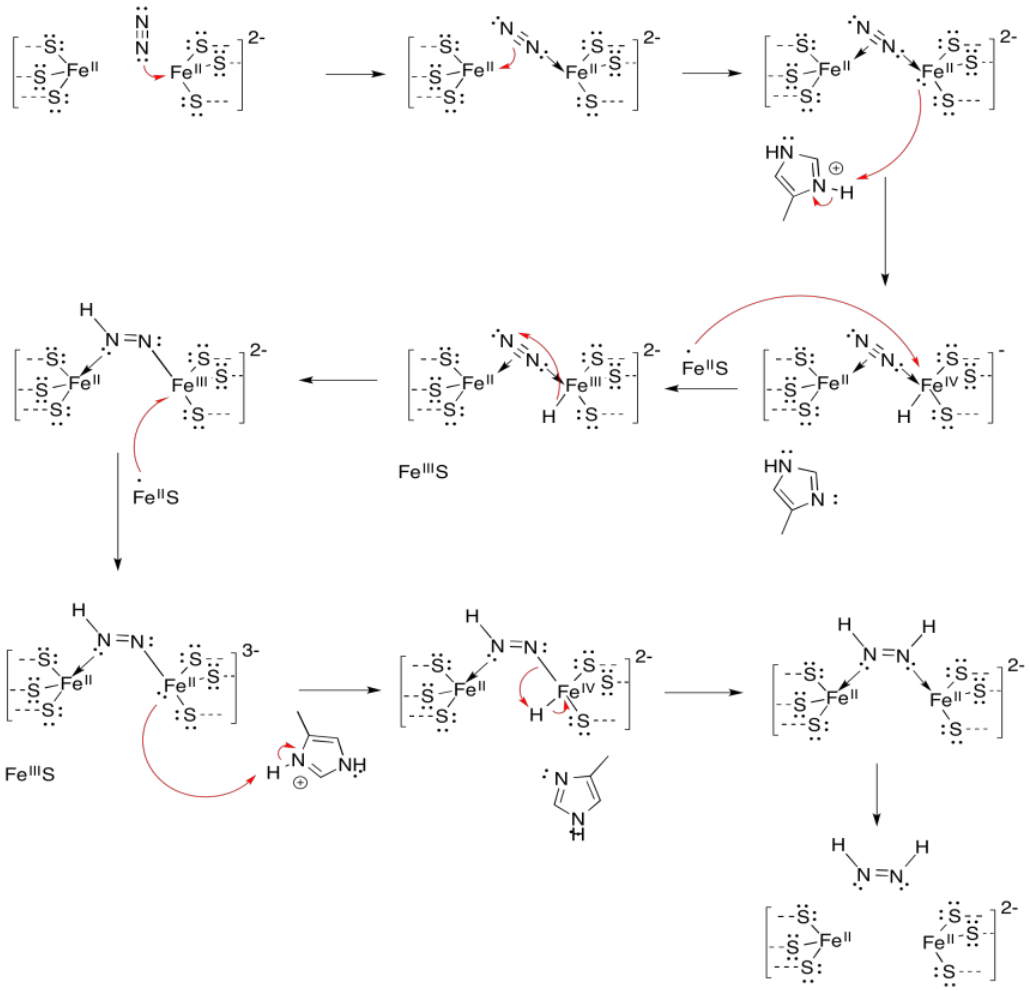
Exercise 5.3.2:



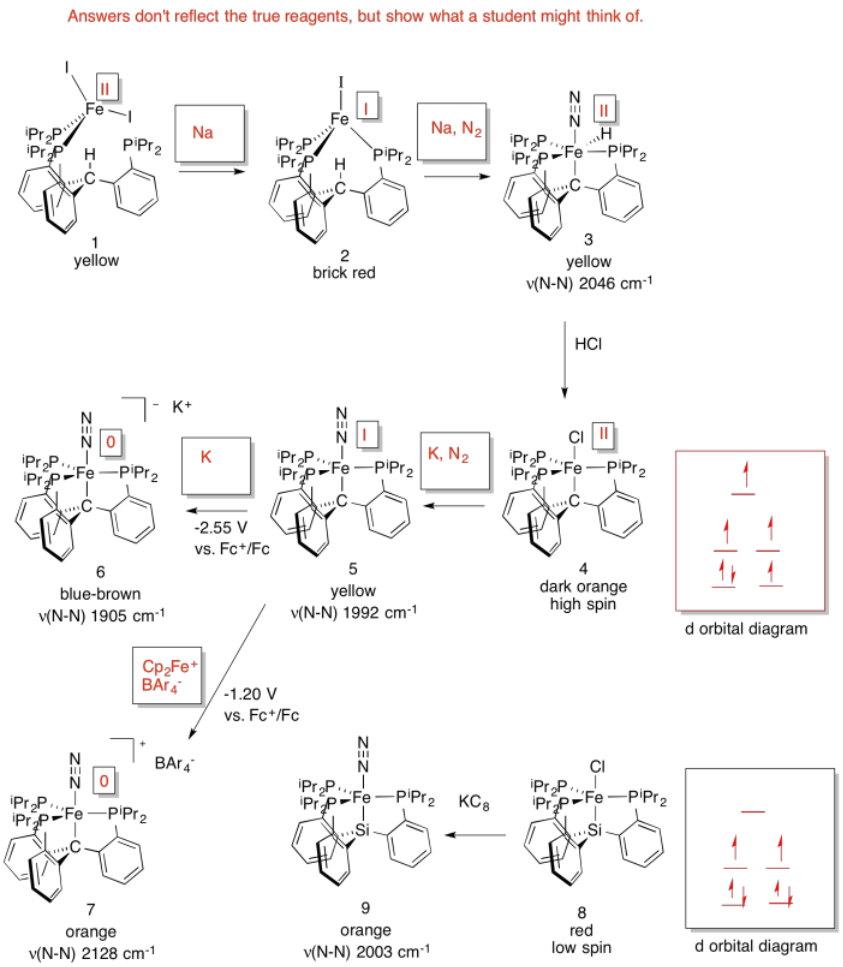
Exercise 5.3.3:



Exercise 5.3.4:



Exercise 5.4.1:



d) As the Fe becomes more reduced, the N-N stretching frequency decreases. That's because the more electron density there is on the Fe, the more it is able to backbond to the N_2 (N_2 is a π acceptor).
