CHM 3411, Dr. Chatfield, Spring 2018
Problem Set 12
Not to turn in, but good practice for the Final Exam

Solutions will be posted Tuesday, April 24

Suggested Discussion Questions: 13A.2,4,5, 13B.1, 13C.1(a)

This problem set explores selected topics in electronic transitions Chapter 13 of the text.

1. Exercise 13A3(a)

2. Exercise 13A.11(a), 13A.11(b)

3. Problem 13A.2

4. Problem 13A.3

5. The ground-state term symbol for O_2^+ is $^2\Pi_g$. The first electronic state has an energy of 38,795 cm^{-1} above that of the ground state and has a term symbol of $^2\Pi_u$. Is the radiative $^2\Pi_u \rightarrow {}^2\Pi_g$ decay of the molecule an example of fluorescence or phosphorescence. Why? [Hint: Although we have not studied term symbols for diatomic molecules in detail, we did learn that the left superscript is the multiplicity.]

6. Problem 13B.1

7. Discussion question 13C.1 (a)