Investigations in Atmospheric Science, by Mandia & Smiley

The *Investigations in Atmospheric Science* (I.A.S.) modules are important because they will form the foundation of all of the quizzes except 'Quiz #1'. It is important to note that each student is to complete the questions at home, and *then* check the answer to see if you were right or wrong. The sequential order of the modules we will cover are listed below. Because of time constraints, we will not go over every question from the modules in class. However, if there is a specific question with one of the problems, we will answer the question in class if a student asks. The answers to the I.A.S. questions are on the course website. It is essential that everyone know that because of bandwith limitations with the course website that you click on the link to the answers *once and only once*. After you click on the link, you can do either one of two things: print out the page, or review your answer on the computer monitor [especially if it involves a colored pencil drawing which would show up as 'black and white' on the print out]. In addition, because of disk size limitations, the links to the I.A.S. answers will be on the course website for a limited time. I will inform you throughout the semester, when the links for each I.A.S. answer key will be active. Once again, consult with those answers only after you complete the questions. It is required that you read the introduction that comes with each module. Often, the answers to the questions are contained in the introduction.

I.A.S. Schedule

#15, #5, #6, #3, #4, #9, #10, #11, #7

I.A.S. #15 (Measurements and Mathematical Concepts)

I-No questions
II-All questions except scientific notation in question one. Do not do questions 5(d), or 5(e).
III-No questions
IV-Questions 1(a) through 1(d) and 1(f)
V-Question number one
VI-Question number one

I.A.S. #5 (Latitude-Longitude, Locations and Places)

Complete all questions except filling in the 'Major City' part of the table in question number 2(c). Do not do questions four through eight.

I.A.S. #6 (Earth-Sun Connections and Space Weather)

Complete 2(a), 2(b), 3(f), all of question 4, all of question 5 except 5(e), all of question 7 and 9(a).

I.A.S. #3 (Temperature)

Complete all questions except the two station circles in the right column of question seven.

I.A.S. #4 (Pressure and Density)

Complete all questions.

Alternate method to solving problem 7(a), page six.

- **Put a decimal point between the last two digits in the coded air pressure reading.**
- **Place a ten in front of the number.**
- **Separately, place a nine in front of the number.**
- **The number closer to 1000 mb is the actual surface pressure.**

For example, decode the following station pressure: '982'

1. **Place a decimal point in between the last two digits.**
    a. **That would give us '98.2'**
2. **Place a ten in front of the number in 1(a)**
    a. **That would give us '1098.2'**
3. **Place a nine in front of the number in 1(a)**
    a. **That would give us '998.2'**
4. **Of the numbers in 2(a) and 3(a), choose the one closer to 1000.**
5. **Therefore, 982 decoded would give us '998.2 mb'.**

Method to solve problem 7(b), page six.

1. **Move the decimal point one place to the right.**
2. **Drop the 'ten', or the 'nine' in front of the surface pressure.**

For example, encode the following surface pressure: '1001.1' mb

1. **Move the decimal point one place to the right.**
    a. **That would give us '10011'.**
2. **Drop the '10' on the left hand side of the number.**
    a. **That would give us '011'.**
3. **Therefore, 1001.1 mb encoded would be '011'.**
    a. **Make sure you put the '011' on the upper right hand side and adjacent to the station circle.**

I.A.S. #9 (Clouds, Fog, and Precipitation)

Complete questions 1 through 6.

I.A.S. #10 (Wind and Global Circulation)

Complete questions 1 through 10.

Weather Window 'C': Part I: Complete questions 1 – 7
Weather Window 'G': Image 2 Questions: Complete questions 1 – 5
Weather Window 'I': Complete questions 1 - 3

I.A.S. #11 (Air Masses, Weather Fronts, and the Station Model)

Complete all questions except 3(a).

I.A.S. # 7 (Severe Weather)

Complete all questions.

Note that to answer some of the problems in I.A.S. #11 and #7, you will need to refer to a one page 'insert' that applies to both of those aforementioned modules. That 'insert' may be located in either I.A.S. #11 or #7. In addition, save the 'Weather Windows' that come with the I.A.S. package as those will be used later in the semester.