CH101 quiz 4 key Thursday out of 12 points:

1. (3points) Arrange the following in order of increasing frequency of electromagnetic radiation. Do this by ordering the corresponding letters (a, b, c, d, or e) of in the answer box.

   a. WBUR, at 90.0 MHz
   b. red light
   c. Wavenumber of C–H stretch
   d. Wavenumber of C=O stretch

   > (smallest frquency) a < d < c < b (largest frequency)

2. (2points) WGBH is one of Boston's NPR radio stations and it transmits at a frequency of 90.9 MHz. What is the wavenumber of the radio waves transmitted by WGBH?

   $1MHz = 1 \times 10^6 Hz$

   $$\frac{90.9 \times 10^6}{1s} \times \frac{1s}{2.99792 \times 10^8 m} \times \frac{1m}{100cm} = 30.3 \times 10^{-4} \frac{1}{cm}$$

   > $\tilde{v} = 30.3 \times 10^{-4}$ cm^{-1}

3. (5 points) For each statement below, circle True or False. Introducing halothane into the atmosphere is dangerous because …

   False   Halothane absorbs visible light from the sun and so causes atmospheric warming

   True   Blackbody radiation emitted by Earth will cause molecular vibrations in halothane.

   True   Halothane will cause atmospheric nitrogen to heat up.

   False   Atmospheric warming cannot take place during nighttime.

   True   Atmospheric warming is due to collisional deactivation of water, CO_2, and similar IR absorbing molecules.

4. (2points extra credit)

   a. What is the name of your Discussion Teaching Assistant (Fellow)?

   b. What is the **Day** and **Time** of your discussion section

CH101 quiz 4 key Friday out of 12 points:

1. **(3 points)** Arrange the following in order of increasing frequency of electromagnetic radiation. Do this by ordering the corresponding letters (a, b, c, d, or e) of in the answer box.

   a. KISS 108 Boston Music station, at 107.9 MHz
   b. green light
   c. Wavenumber of O–H stretch
   d. Wavenumber of C=N stretch

   (smallest frquency) a $< d < c < b$ (largest frequency)

2. (2 points) KISS 108 Boston Music station, radio stations and it transmits at a frequency of 107.9 MHz. What is the wavenumber of the radio waves transmitted by WGBH?

   $1MHz = 1 \times 10^6 Hz$

   $\frac{107.9 \times 10^6}{1s} \times \frac{1s}{2.99792 \times 10^8 m} \times \frac{1m}{100cm} = 35.992 \times 10^{-4} \frac{1}{cm}$

   $\tilde{v} = 35.99 \times 10^{-4} \text{ cm}^{-1}$

3. **(5 points)** For each statement, circle T if true and F if false.

   False : Atmospheric warming is due to absorption of IR light by N_2 and O_2.

   False: Atmospheric warming is due to absorption of visible sunlight by water, CO_2, and similar molecules.

   False: Atmospheric warming is due to primarily absorption of IR sunlight by water, CO_2, and similar molecules.

   False: Atmospheric warming cannot take place during nighttime.

   True: Atmospheric warming is due to collisional deactivation of water, CO_2, and similar IR absorbing molecules.

4. (2points)

   a. What is the name of your Discussion Teaching Assistant (Fellow)?

   b. What is the **Day** and **Time** of your discussion section?