Quiz 15– Equilibrium
AP Chemistry

This quiz must be completed and brought to my room <u>before</u> the start of first period on Tuesday. Failure to do so will incur a 25% penalty unless there is a legal reason.

You must <u>show all work</u> in order to receive credit.

AP Instructions:
CLEARLY SHOW THE METHOD USED AND THE STEPS INVOLVED IN ARRIVING AT YOUR ANSWERS. It is to your advantage to do this, since you may obtain partial credit if you do and you will receive little or no credit if you do not. Attention should be paid to significant figures.

Be sure to write all your answers to the questions on the lined pages following each question in the booklet with the goldenrod cover. Do NOT write your answers on the lavender insert.

1. Exactly 1.00 mol each of H_2 and I_2 gases are heated in a 30.00L evacuated chamber to 470°C. An equilibrium mixture is obtained with HI gas. Using a K_c=50.0, determine:
    a. The balanced equation for the equilibrium reaction
    b. How many mol of I_2 remain unreacted when equilibrium is established.
    c. The total pressure in the chamber.
    d. The partial pressures of I_2 and HI in the equilibrium mixture.
    e. Now, if one additional mol of H_2 is introduced into this equilibrium system, how many mol of the original iodine will remain unreacted?
2. A 3.245g sample of a titanium chloride was reduced with sodium to metallic titanium. After the resultant sodium chloride was washed out, the residual titanium metal was dried and weighed 0.819g. What was the empirical formula of the titanium chloride?
3. How many photons of light having a wavelength of 4000 angstroms are necessary to provide 1.00j of energy?
4. Draw the electron dot structures for CH_2O, XeF_4, ICl_2^+, and $TeCl_4$ and describe their shapes, hybridization and bond angles.