ORGANIC TUTORIAL-1

Dated 25/8/2014

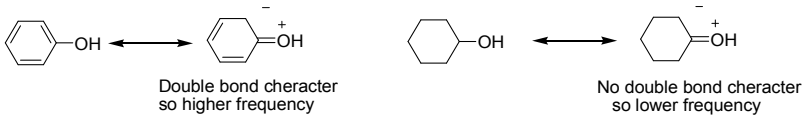
Problems and Solutions

1. *Which is higher in energy per photon, electromagnetic radiation of with wave number 3000 cm^{-1} or with wave length 2μm (Write the question in the board and allow the students to solve the problem first, leave the questions for some time for late comers)*

2. *Light of what wavelength has a wave number200 cm^{-1}. (Write the question in the board and allow the students to solve the problem first)*

3. *Assuming the force constant are the same, which will occur at a higher frequency. (a)a C-O or a C-Cl stretch? (b)a C-O stretch or a C-C stretch?*

4. *Which will occur at a higher frequency?*
   (a) *The C-O stretch of phenol or C-O stretch of cyclohexanol?*



5. *Problems based on Beer-Lambert's law:*

   (i) A solution of thickness 2 cm transmit 40% incident light. Calculate the concentration of the solution,

   given that ε = 6000 dm^3/mol/cm.

6. *A solution shows a transmittance of 20%, when taken in a cell of 2.5 cm thickness. Calculate its concentration, if the molar absorption coefficient is 12000 dm^3/mol/cm.*

7. *Calculate the molar absorptivity of a 1 x10^{-4}M solution, which has an absorbance of 0.20, when the path length is 2.5 cm.*