**SI WORKSHEET 16**

1. What is bond enthalpy? Bond making is an endothermic process and bond breaking is an exothermic process. If more energy is released in bond making than by bonds formed this is an example of a EXOTHERMIC reaction. Bond enthalpy refers to the heat energy in a bond between atoms at constant pressure.
2. Frequency and wavelength are INVERSELY related. As one goes up the other ­­­DECREASES. Energy and wavelength are INVERSELY related. As one goes up the other INVERSELY.
3. A beam of red light at 675 nm has what frequency? How much energy is this?

Speed of light= wavelength (in m)\*frequency (in s)🡪3x108=6.75x10-7(X)🡪4.44x1014

Energy= planck’s constant \* frequency🡪 6.626x10-34\*4.44x1014🡪2.945x10-19J

1. What is the photoelectric effect? Particles of light (photons) display similar properties as electrons and so for many cases they are almost considered the same thing. Photons therefore can have energy and this energy is used to do work (such as Photosynthesis)
2. What does Heisenberg’s Uncertainty Principle refer to?

It is impossible to know the speed and position of an electron at the same time. As soon as you measure one parameter, the other one has changed. This is because electrons move very fast and have wavelike properties (like photons).

1. Consider the line emission spectrum for Hydrogen: Is more energy released when an electron goes from the n=3🡪n=1 state or when n=5🡪n=3? How much energy is released when an electron goes from n=3🡪n=1? More energy would be released when an element goes from N=3🡪n=1 state. To calculate how much energy would be released you have to do ΔE=Ef-EI=  - = -1.937x10-18J released.
2. Which of the following IS NOT an acceptable set of quantum numbers?
   1. {4, 3, 3, + ½}
   2. {1, 0, 0, -1/2}
   3. {2, 1, 2, +1/2}
   4. {3, 1, 0, -1/2}