Chemistry 141 Name

Martin Larter Quiz 5 (25 points) April 1, 2016

All work must be show to receive credit. Remember, significant figures are important!

1. (18 points) The threshold frequency of titanium is 1.05 x 1015 Hz. Answer the following questions regarding titanium
   1. What is the minimum wavelength required to ionize an atom of titanium?
   2. What is the minimum energy required to ionize an atom of titanium?
   3. What frequency of light is required to ionize 100 atoms of titanium? (Explain your answer.)
   4. How many photons would be required to ionize 4.25 grams of titanium?
   5. What is the ionization energy in kJ/mol for titanium?
   6. If a sample of titanium was exposed to light with a wavelength of 215 nm, calculate the kinetic energy of the electrons emitted.
2. (4 points) Arrange the following forms of electromagnetic radiation in order of:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| infrared | x-rays | orange visible light | microwave | blue visible light |

a) Decreasing wavelength \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b) Decreasing energy\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. (3 points) What is meant by energy levels of an atom are quantized?