Grossmont College Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Chemistry 141

Quiz 6 (22 points) Fall 2015

Show all your work and answer all questions in the space provided.

*c* = 3.00 x 108 m s-1; *h* = 6.63 x 10-34 J s; *RH* = Rydberg constant = 2.18 x 10-18 J ;

1. (8 points) The frequency of the electromagnetic radiation is 6.04 x 1015 /sec from a lamp that produces 9.0 J/sec Answer the following questions
   1. What is the wavelength of this electromagnetic radiation in nanometers?
   2. How many quanta of electromagnetic radiation would it generate if it were left on for 6.0 s?
2. (8 points) The threshold energy of titanium is 419 kJ/mol e-.If a sample of titanium was exposed to light with a wavelength of 215 nm, calculate the kinetic energy of the electrons emitted.
3. (6 points) The following is a diagram of energy states and transitions in the hydrogen atom. Match each arrow with the correct response below



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| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 1. The absorption line with the longest wavelength |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 1. The emission line with the shortest wavelength |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 1. The absorption line with the lowest energy |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 1. The emission line with the highest energy |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 1. The absorption line with the highest frequency |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 1. The line corresponding to the ionization energy of hydrogen |