

4th Practice Exam Answer Key

- Which of the following produces radiation of the highest frequency?
 - x-rays
- Planck suggested that all energy gained or lost by an atom must be some integral multiple of a minimum amount of energy called a(n)
 - quantum.
- What name is given to a region of an electron probability density graph where the probability of finding the electron is zero?
 - node
- Which of the following electronic transitions in a hydrogen atom would have the longest wavelength?
 - $n = 4$ to $n = 3$
- The mathematic expression(s) which correctly give(s) the relationship(s) between the speed, wavelength, and frequency of electromagnetic radiation is (are):
 - $v = c/\lambda$
 - $c = v\lambda$
 - $\lambda = c/v$
 - 1, 2, and 3
- A rifle bullet (mass = 1.50 g) is moving with a velocity of 7.00×10^2 mph. What is the wavelength associated with this bullet? ($h = 6.626 \times 10^{-34}$ kg m^2/s , 1000 m = 0.62137 miles)
 - 1.41×10^{-33} m
- Which of the following best describes the energy change accompanying the process of breaking bonds in a molecule? (Ignore any subsequent reaction the may occur.)
 - Always endothermic.

8. Consider 10.0 g Al, 10.0 g Cu and 10.0 g ethanol (C₂H₅OH). Which requires more energy for a 5.0 °C temperature rise than does **1.0** gram of water?

<u>Substance</u>	<u>Specific Heat (J/g K)</u>
Ethanol (C ₂ H ₅ OH)	2.46
Water	4.184
Copper	0.385
Aluminum	0.902

- d. both 10.0 g Al and 10.0 g C₂H₅OH