

CHAPTER 4 REVIEW

Arrangement of Electrons in Atoms

SECTION 1

SHORT ANSWER Answer the following questions in the space provided.

1. In what way does the photoelectric effect support the particle theory of light?

2. What is the difference between the ground state and the excited state of an atom?

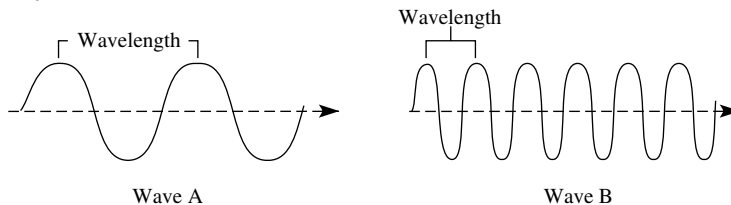
3. Under what circumstances can an atom emit a photon?

4. How can the energy levels of the atom be determined by measuring the light emitted from an atom?

5. Why does electromagnetic radiation in the ultraviolet region represent a larger energy transition than does radiation in the infrared region?

SECTION 1 continued

6. Which of the waves shown below has the higher frequency? (The scale is the same for each drawing.) Explain your answer.



7. How many different photons of radiation were emitted from excited helium atoms to form the spectrum shown below? Explain your answer.



Spectrum for helium

PROBLEMS Write the answer on the line to the left. Show all your work in the space provided.

8. _____ What is the frequency of light that has a wavelength of 310 nm?

9. _____ What is the wavelength of electromagnetic radiation if its frequency is 3.2×10^{-2} Hz?