Chapter 5

STUDY GUIDE

5.2 QUANTUM THEORY

Complete the sentence or answer the question.

1. When an electron in a hydrogen atom moves from a higher to a lower energy state, the energy difference is emitted as a quantum of _____.

2. Define the four quantum numbers *n*, *l*, *m*, and *s*, explain what information is given by each, and describe the range of values each may take.

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   _____

   _____

   _____

   _____

   _____

   _____

   _____

3. Orbitals of the same energy are said to be _____.

4. The space occupied by one pair of electrons is called a(n) _____.

5. What is the formula for calculating the maximum number of electrons that can occupy any energy level in an atom? _____ (DO THIS QUESTION AFTER COMPLETING #6.)

6. Complete the following table.

Energy level	Number of sublevels	Number of orbitals	Maximum number of electrons
1			
2			
3			
4			

7. State the *Pauli exclusion principle.*

   _____

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