

General Chemistry I
Chapter 7: Example Problems on Quantum Numbers

1. (a) How many subshells (or sublevels) exist with a principal quantum number of $n = 4$? Label each by its value of n and the letter designation for l . (b) How many orbitals make up the $n = 4$ shell? (c) How many electrons can occupy the $n = 4$ shell?

2. Are the following combinations of quantum numbers allowed? If not, propose a change in one of the quantum numbers that would correct the problem.
- (a) $n = 2; l = 0, m_l = -1$
 - (b) $n = 4; l = 3; m_l = -1$
 - (c) $n = 3; l = 1; m_l = 0$
 - (d) $n = 5; l = 2; m_l = +3$