

Homework #3

September 22 (to be tested September 29)

from Averill: Chapter 8, problems 16, 18, 53, 58, 60, 61, 67, 69, 74, 80.

Additional questions

1. How many of the following electron configurations are allowed?

- (a) $1s^2 2s^2 2p^7$
- (b) $1s^2 2s^2 2p^6 2d^1$
- (c) $[\text{Ne}] 4s^2 4p^4$
- (d) $[\text{Ar}] 3d^6 4s^2$
- (e) $1s^2 2s^2 2p^8 3s^2 3p^4$

2. Determine which of the following five electronic states are forbidden:

	n	ℓ	m
(1)	2	2	1
(2)	1	0	1
(3)	3	2	0
(4)	4	1	2
(5)	3	2	2

3. (a) In box notation, give the complete ground-state electron configuration for each of the following chemical entities: Cr, Ca^{5+} , I, He^{2+} , Dy^{3+} .

(b) Give the values of n , ℓ , and m for each orbital in the 5d subshell.