

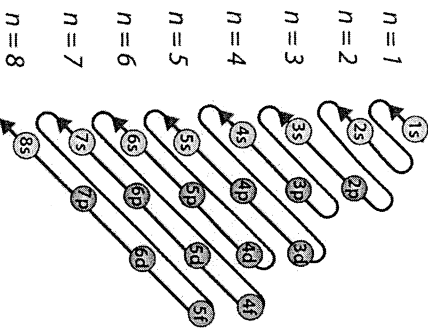
Academic Chemistry: Electrons Review Sheet

1. How many electrons can fit into each orbital?

s: 2 p: 6
 d: 10 f: 14

2. When energy is added to an atom, its valence electron(s) briefly move up a level into its Excited state.

3. When the electrons fall back down to their ground state, Energy is released, in regular life we see this as Light.



4. Fill in this chart for each element:

Element	Total # of Electrons	Valence Electrons	Ion Formed	Electron Configuration
Helium	2	2	0	1s ²
Nitrogen	7	5	-3	1s ² 2s ² 2p ³
Neon	10	8	0	1s ² 2s ² 2p ⁶
Magnesium	12	2	+2	1s ² 2s ² 2p ⁶ 3s ²
Silicon	14	4	-4	1s ² 2s ² 2p ⁶ 3s ² 3p ²
Calcium	20	2	+2	1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 4s ²
Chromium	24	ignore for now	ignore for now	1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 4s ¹ 3d ⁵
Strontium	38	2	+2	1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 4s ² 3d ¹⁰ 4p ⁶ 5s ²
Bromine	35	7	-1	1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 4s ² 3d ¹⁰ 4p ⁵

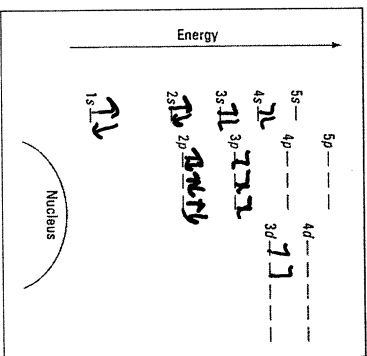
5. Which element has these electron configurations?

- A) 1s² 2s² 2p⁶ 3s² Magnesium (Mg)
- B) 1s² 2s² 2p⁶ 3s² 3p⁶ 4s² 3d¹⁰ Zinc (Zn)
- C) 1s² 2s² 2p⁶ Neon (Ne)

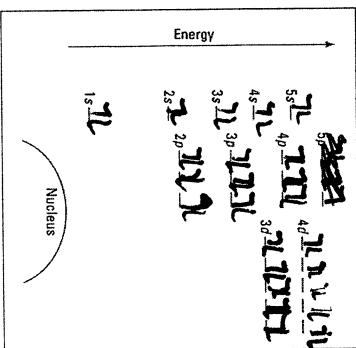
6. Fill in if these atoms gain or lose valence electrons to form ions, and how many.

- A) Na lose 1
- B) Sr lose 2
- C) N gain 3
- D) F gain 1
- E) Kr None - does not form ions.

7. Energy Diagrams – use the PT to find the total number of electrons in each atom, then use up and down arrows to show where the electrons are located.



Titanium (Ti) (22 e⁻)



Indium (In) (49 e⁻)

8. Electron Configuration of Ions – for neutral atoms, write the electron configuration as normal. For ions, add or subtract the correct number of electrons.

- (A) regular nitrogen atom 1s² 2s² 2p³ (gains 3)
- (B) nitrogen ion, N³⁻ 1s² 2s² 2p⁶
- (C) chlorine ion, Cl¹⁻ 1s² 2s² 2p⁶ 3s² 3p⁶ (gains 1)
- (D) sodium ion, Na⁺¹ 1s² 2s² 2p⁶ (loses 1)