13/9. HW #3.

1. Calcium and oxygen

Ca +2.
O -2

(A). CaO

2. Boron and Sulfur

B. +3.
S -2.

(D). B_2S_3

3. (A) NaCl
(B) KCl.

Smaller radius, stronger bonds.

4. (A) MgO +2 -2 Smallest radius
B. BaTe +2 -2
(C) CaS +2 -2 Second smallest radius
D. SrSe +2 -2.

5. La Te bond. % Ionic character?

La = Electronegativity of 1.1
Te = Electronegativity of 2.1

% Ionic Character = $1 - e^{-0.25(1.1-2.1)^2}$

$= 0.2211$

$0.2211 \times 100 = \underline{22.11\%}$

6. A. $BeBr_2$ → 65.74%

B. MgI_2 → 36.59%

C. KCl → 74.56%

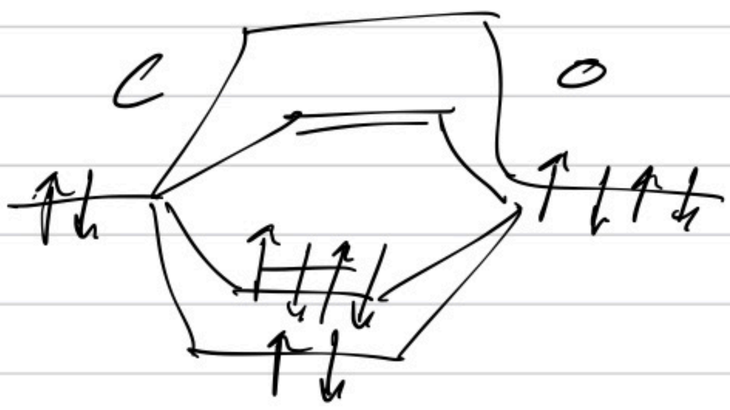
(D.) SrF_2 → 89.93%

7. MO Diagram for CO.

BO.
$\frac{1}{2}(\sigma - \sigma^*)$ → $\frac{1}{2}$ (bonding − antibonding).

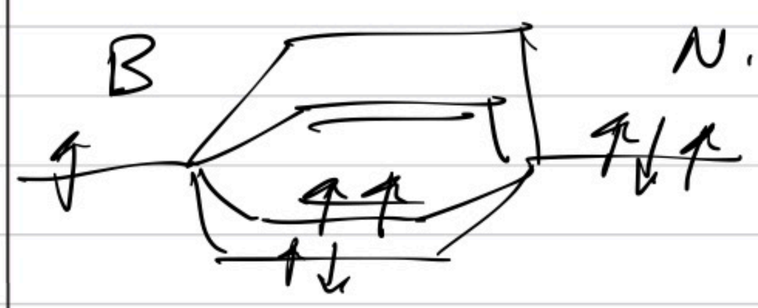
C → 6 electrons
O → 8 electrons. → 14 total.
10 bonding, 4 antibonding

BO = $\frac{1}{2}(10-4) = \frac{1}{2}(6) = 3$ → Triple bond. $C \equiv O$.



Unpaired electrons → Magnetic

8. BN.



B.

9. (A) More stable after gain of electron

10. (B) Dragontz

Stable. No neutrons.