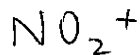
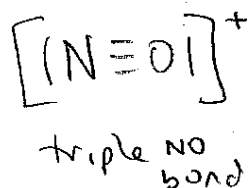
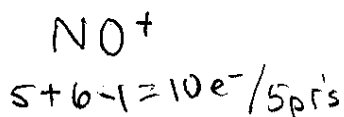


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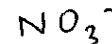
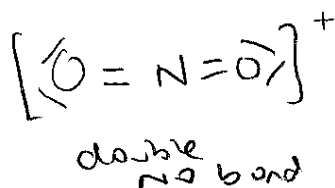
Name \_\_\_\_\_ Rec. Instr. \_\_\_\_\_

Two-Digit Section No. \_\_\_\_\_ Lab. Instr. \_\_\_\_\_

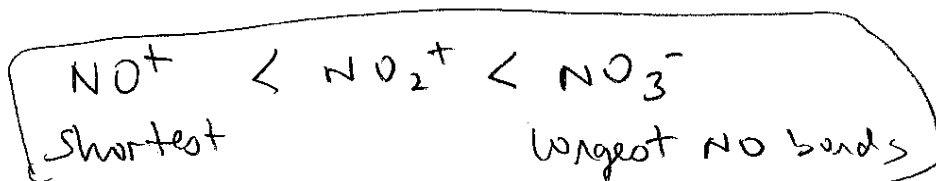
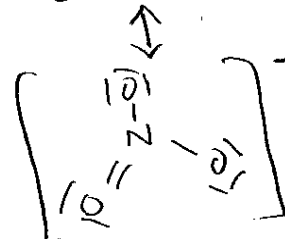
1. [10 points] Based on Lewis structures, predict the ordering of N-O bond lengths in  $\text{NO}^+$ ,  $\text{NO}_2^+$ , and  $\text{NO}_3^-$ .



$$5 + 2(6) - 1 = 16e^- / 8 \text{ pairs}$$

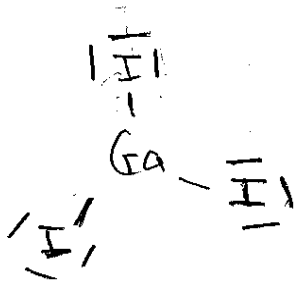


$$5 + 3(6) + 1 = 24e^- / 12 \text{ pairs}$$



2. [10 points] Draw the Lewis formula for  $\text{GaI}_3$ . What term describes the shape of this species?

$$3 + 3(7) = 24e^- / 12 \text{ pairs}$$



3 e<sup>-</sup> domains  
trigonal planar

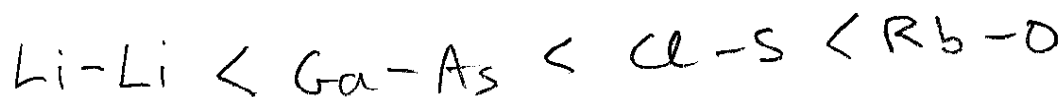
3. [10 points] Order the following bonds from lowest to highest polarity.

Cl-S

Rb-O

Ga-As

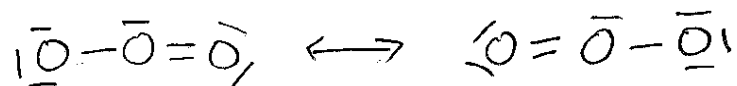
Li-Li



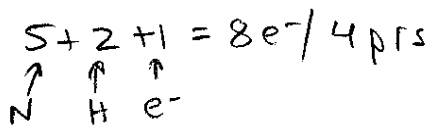
Name KEY Rec. Instr. \_\_\_\_\_

Two-Digit Section No. \_\_\_\_\_ Lab. Instr. \_\_\_\_\_

1. [10 points] Draw the resonance forms for
- $O_3(g)$
- .
- $3(6) = 18e^-$
- , 9 prs



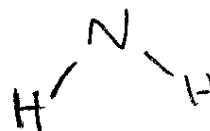
2. [10 points] Draw the Lewis formula for
- $NH_2^-$
- . What term describes the shape of this species?



4  $e^-$  domains  
around N,  
so adopts  
tetrahedral  
shape



eliminate  
lone prs  
and have  
"bent" structure



3. [10 points] Order the following bonds from lowest to highest polarity.

P-F

Si-F

Al-F

S-F



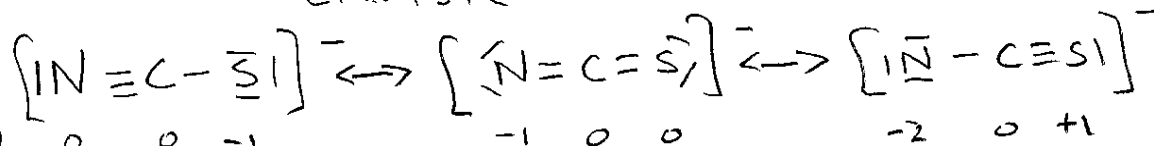
Name \_\_\_\_\_ **KEY** \_\_\_\_\_ Rec. Instr. \_\_\_\_\_

Two-Digit Section No. \_\_\_\_\_ Lab. Instr. \_\_\_\_\_

1. [10 points] Draw the resonance forms for
- $\text{NCS}^-$
- , and determine the most representative structure.

$$4 + 5 + 6 + 1 = 16 e^- / 8 \text{ prs}$$

$$\text{C} + \text{N} + \text{S} + e^-$$



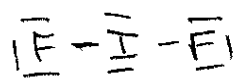
formal charges  $\rightarrow$  0 0 -1                      -1 0 0                      -2 0 +1

Nitrogen is most electronegative & will prefer negative charge, & middle structure has lower charges than right structure.

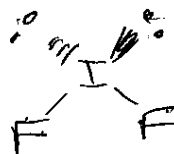
most representative is  $\left[ \overset{-}{\text{N}} = \text{C} = \overset{-}{\text{S}} \right]^-$

2. [10 points] Draw the Lewis formula for
- $\text{IF}_2^-$
- . What term describes the shape of this species?

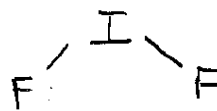
$$3(7) - 1 = 20 e^- / 10 \text{ prs}$$



4  $e^-$  domains around I,  
adopt tetrahedral shape



remove lone pairs and have "bent" structure



3. [10 points] Order the following bonds from lowest to highest polarity.

P-F

Si-F

Al-F

S-F

