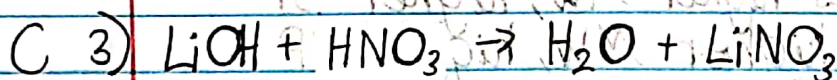
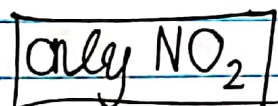
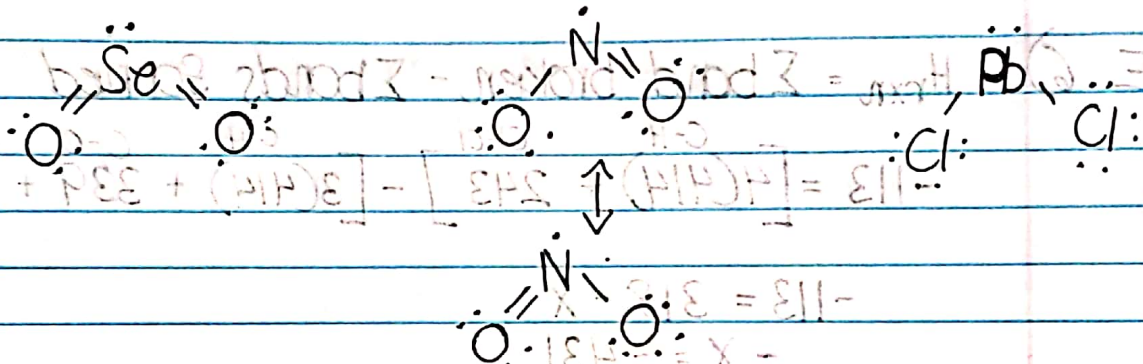
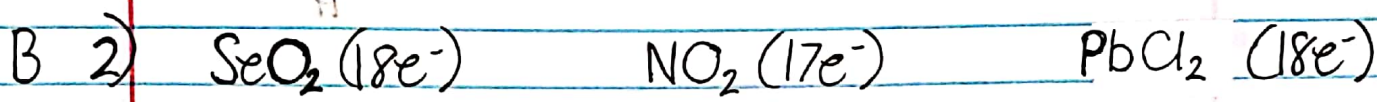
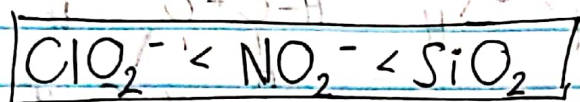
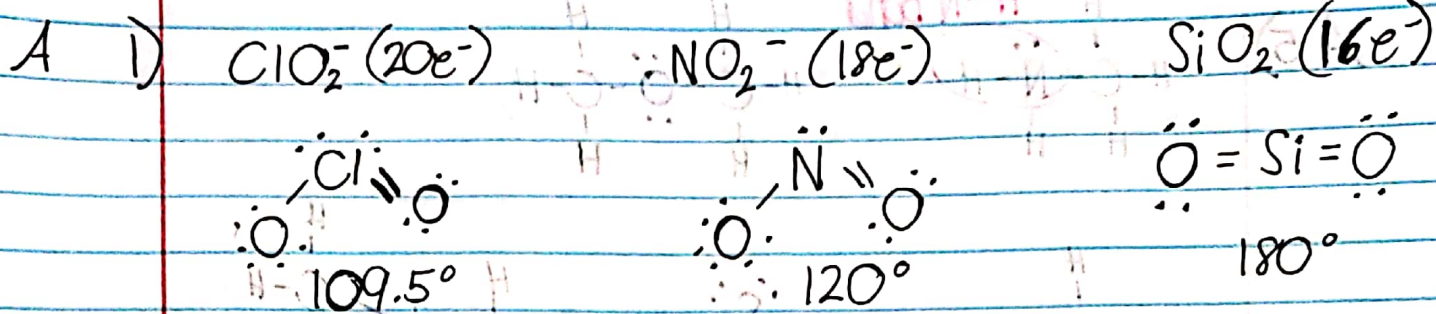
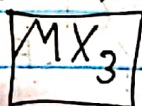
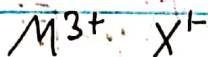
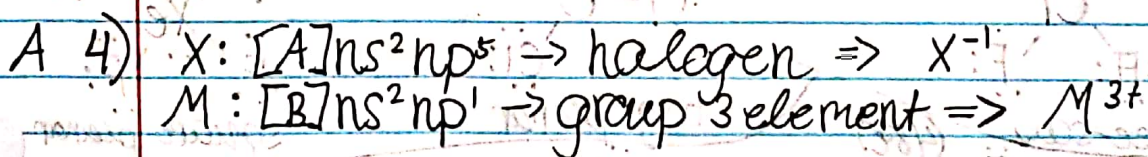


CHM 1025 Exam 3 Review Solutions

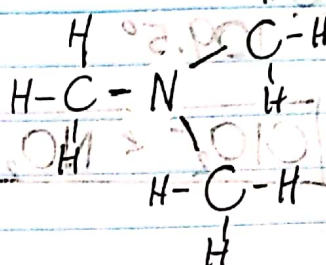
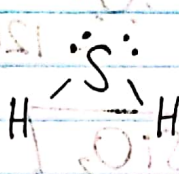
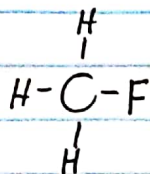
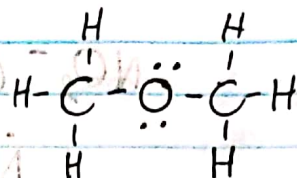
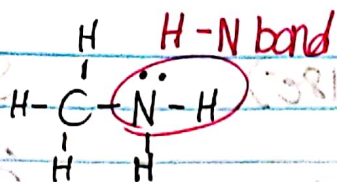


$$.5\text{M} \cdot .025\text{L} = \left(\frac{0.0125\text{mol LiOH}}{1} \right) \left(\frac{1\text{mol HNO}_3}{1\text{mol LiOH}} \right) = 0.0125\text{mol HNO}_3$$

$$\text{M} = \frac{\text{mol}}{\text{L}} = \frac{0.0125\text{mol}}{0.040\text{L}} = \boxed{0.3125\text{M HNO}_3}$$



A 5)



E. 6)

$H_{rxn} = \Sigma \text{ bond broken} - \Sigma \text{ bonds formed}$

$$-113 = [4(\overset{\text{C-H}}{414}) + \overset{\text{Cl-Cl}}{243}] - [3(\overset{\text{C-H}}{414}) + \overset{\text{C-Cl}}{339} + \overset{\text{H-Cl}}{X}]$$

$$-113 = 318 - X$$

$$-X = -431$$

$$X = 431 \text{ kJ/mol}$$

E 7)

XA: C7H16 has higher MW, higher BP

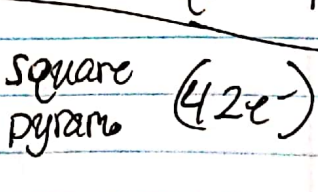
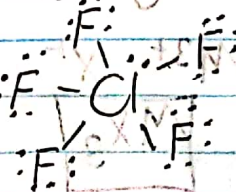
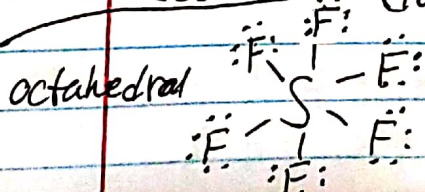
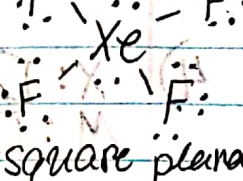
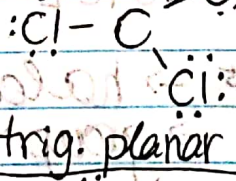
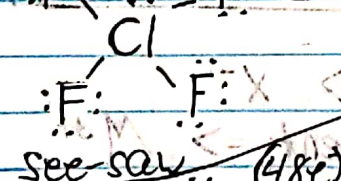
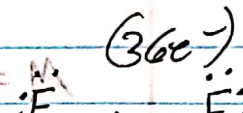
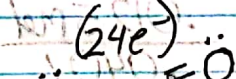
XB: Xe has higher MW, higher BP

XC: H2O has H-bonding, higher BP

XD: CH3CH2OH has H-bonding, higher BP

✓E: CF4 has lower MW, lower BP

C 8)



B 9) final: 0.70M, 500 mL

$$.7M \cdot .5L = 0.35 \text{ mol } NH_3$$

Solution 1: 0.100M, 200 mL

$$.1M \cdot .2 = 0.02 \text{ mol } NH_3$$

$$\frac{.35}{-.02} = \frac{.33 \text{ mol}}{.3L} = \boxed{1.1M}$$

.33 mol NH_3 from unknown solution

A 10) $\approx$ EN values:

$$C = 2.5 \quad C-O \Rightarrow 3.5 - 2.5 = 1$$

$$O = 3.5 \quad H-C \Rightarrow 2.5 - 2.2 = .3$$

$$H = 2.2 \quad N-Cl \Rightarrow 3 - 3 = 0$$

$$N = 3 \quad Cl-Br \Rightarrow 3 - 2.5 = .5$$

$$Cl = 3 \quad O-F \Rightarrow 4 - 3.5 = .5$$

$$Br = 2.5$$

$$F = 4$$

D 11) $Mg^{2+} : 1s^2 2s^2 2p^6$

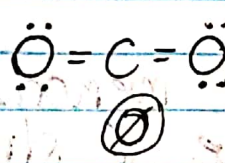
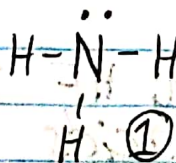
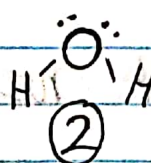
$Na^+ : 1s^2 2s^2 2p^6$

$O^{2-} : 1s^2 2s^2 2p^6$

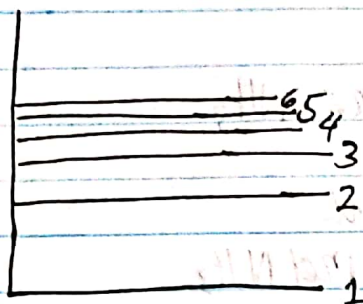
$Ar : 1s^2 2s^2 2p^6 3s^2 3p^6$

$Ne : 1s^2 2s^2 2p^6$

E 12)



E 13)



2 → 1 is largest jump ∴ most energy

C 14)

$$E = \frac{hc}{\lambda} = \frac{(6.626 \times 10^{-34})(3 \times 10^8)}{434.1 \times 10^{-9} \text{ m}} = \boxed{4.58 \times 10^{-19} \text{ J/photon}}$$

D 15)

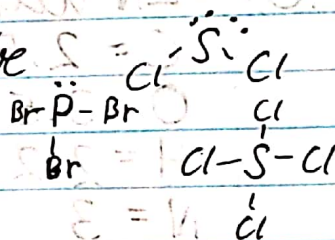
$\text{CH}_2\text{Cl}_2 \rightarrow$ polar bonds & molecule

$\text{SCl}_2 \rightarrow$ polar bonds and molecule

$\text{PBr}_3 \rightarrow$ polar bonds and molecule

✓ $\text{SiCl}_4 \rightarrow$ polar bonds, np molecule

$\text{ClO}_2 \rightarrow$ polar bonds & molecule



B 16)

$$\frac{g \text{ KI}}{g \text{ solution}} \times 100 = \% \text{ KI}$$

$$\frac{x}{700g} \times 100 = 15$$

$$\boxed{x = 105g \text{ KI}}$$

A 17)

$\Delta T_b = K_m(i) \rightarrow$ van't Hoff factor

• how much something breaks apart

$\text{NaCl}_{(s)} \rightarrow \text{Na}^+ + \text{Cl}^- \quad i = 2 \quad (\uparrow \text{BP more})$

$\text{C}_6\text{H}_{12}\text{O}_{(s)} \rightarrow \text{C}_6\text{H}_{12}\text{O}_{(aq)} \quad i = 1$

C 18)

strict memorization, HF is not one of the 6 strong acids

D 19)

acidic H = H that is donated

★ H's attached to an oxygen ★