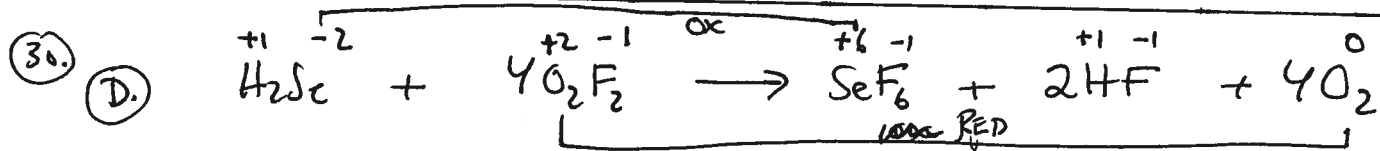
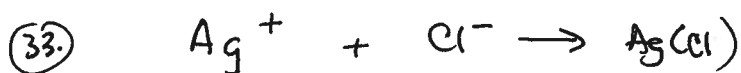


(28.) Lattice energy $\frac{Q^2}{d}$; Mg forms a +2 ion and O^{2-} is more negatively charged ($O^{2-} > F^-$ as far as size) (1999) (B)

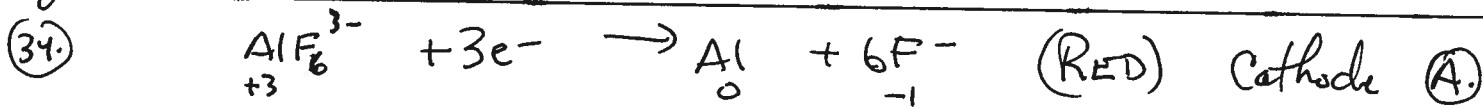


(31.) Not a very good question! (C)

(32.) (D) $-\overset{1}{C}_1 - \overset{2}{C}_2 = \overset{3}{C}_3$ sp^2 hybridized around C_2 & C_3 ; sp^3 hybridized around C_1



.10 mol Cl^- (from NaCl) + .20 mol Cl^- from $CaCl_2$ so $.30 \text{ mol } Cl^-$ requires .30 mol Ag^+ (C)



(35.)
$$\frac{15 \text{ min}}{60 \text{ sec}} \times \frac{C}{96,500 \text{ amp sec}} \times \frac{\text{mol } e^-}{1 C} \times \frac{10 \text{ amp}}{1} \times \frac{1 \text{ mol Al}}{3 \text{ mol } e^-} \times \frac{27 \text{ g}}{1 \text{ mol Al}} = (C)$$

(36.) Rate = $k [NO]^1 [O_2]^2$ $(\frac{.40}{.10})^x = \frac{8.0 \times 10^{-3}}{5.0 \times 10^{-4}}$; $4^x = \frac{80 \times 10^{-4}}{5.0 \times 10^{-4}}$
 $4^x = 16$; $x = 2$ (B)

(37.) Going from Between the third I.E. to the fourth I.E. there is a huge jump in Energy representing the removal of the 4th e^- so (C) Al !!

(47.)
$$\frac{62.2 \text{ g HF}}{178 \text{ g}} \approx \frac{.3}{.3} \quad \left\} \quad \frac{37.4 \text{ g Cl}}{35.5 \text{ g Cl}} = \frac{1}{.3} = 3$$

 so $HFCl_3$ (C)

48. $\left. \begin{array}{l} 100g > 1\frac{1}{2} \text{ life} \\ 50g > 2nd \frac{1}{2} \text{ life} \\ 25g > 3rd \frac{1}{2} \text{ life} \\ 13.5 \\ 12.5g \end{array} \right\} \text{ This Requires } 24 \text{ days !!!}$ so each requires about 8 days !!

(B) (1999)

52. Go with high Pressure & Low temp!!

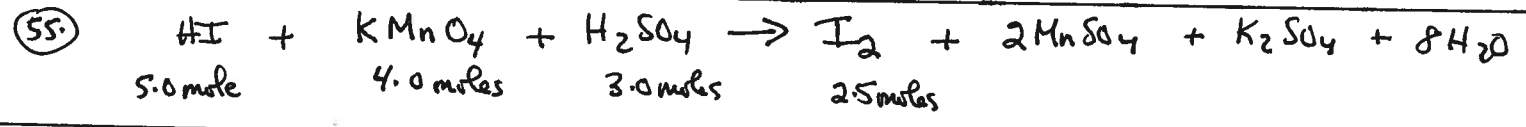
53. $W + X \rightarrow Y + Z$

[I] 1.2atm 1.6atm

[A] -.2 -.2 .2atm (.2atm) (A)

Final [A] 1.0atm 1.4atm

54. ∴ since this is Exothermic increasing will drive Rxn to left & Lower the Keg!



57. $M^{3+} + 3e^- \rightarrow M(s) \quad E^{\circ}_{Red} = ???$

$Ag(s) \rightarrow Ag^+ + e^- \quad E^{\circ}_{ox} = -.80V$

$E_{total} = -2.46V$

$-2.46 = -.80V + E^{\circ}_{red}$

$E^{\circ}_{Red} = -1.66V$ (A)

59. $\frac{4 \times 10^{-2} \cdot 2.5 \times 10^{-1} \cdot 0.1}{.040L \cdot 25mole \cdot L} = 10 \times 10^{-3}$

$+ \frac{6 \times 10^{-2} \cdot 3.0}{(.0600L) \cdot (10^{-1})} = 18 \times 10^{-3}$

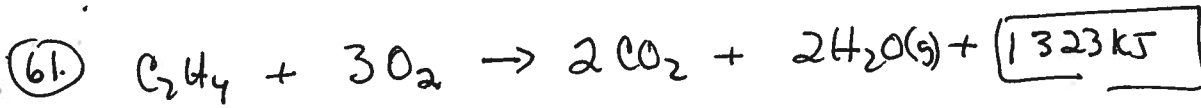
$\frac{10 \times 10^{-3} + 18 \times 10^{-3}}{.100L} = \frac{28 \times 10^{-3}}{1 \times 10^{-1}} = 28 \times 10^{-2} M = 28M$ (C)

60. $NH_4NO_3(s) \rightarrow N_2O(g) + 2H_2O(g)$

.03mol .03mol .060mol

$PV = nRT \quad P = \frac{nRT}{V} = \frac{(.09mol) \cdot (.0821) \cdot (400)}{9 \times 10^{-2} \cdot 4 \times 10^2} \div 1L$

$\frac{72}{28} = 2.88 \text{ atm}$ (A) = 3atm

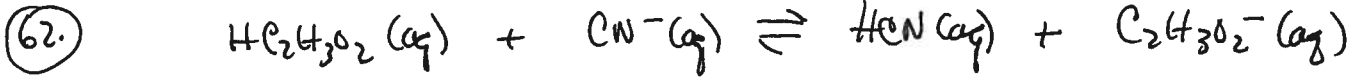


$$\begin{array}{r} -1323 \\ + 2(-44) \\ \hline -1411 \end{array}$$

← what if $2H_2O(l)$ instead?

(1999)

(E)

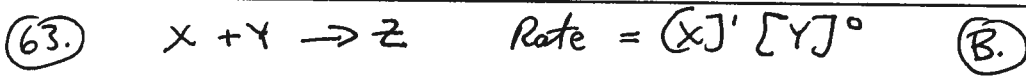


(A)

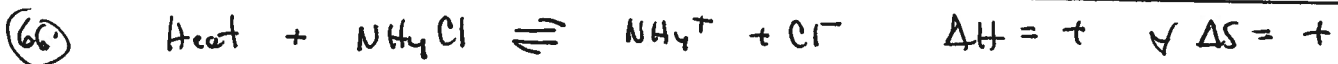
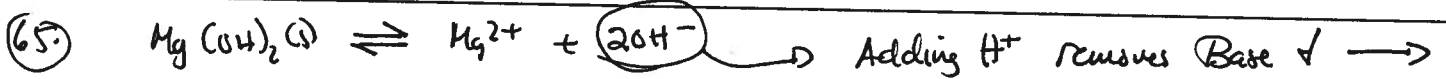
Key = 3.7×10^4

so $HC_2H_3O_2 > HCN$
↑ stronger acid

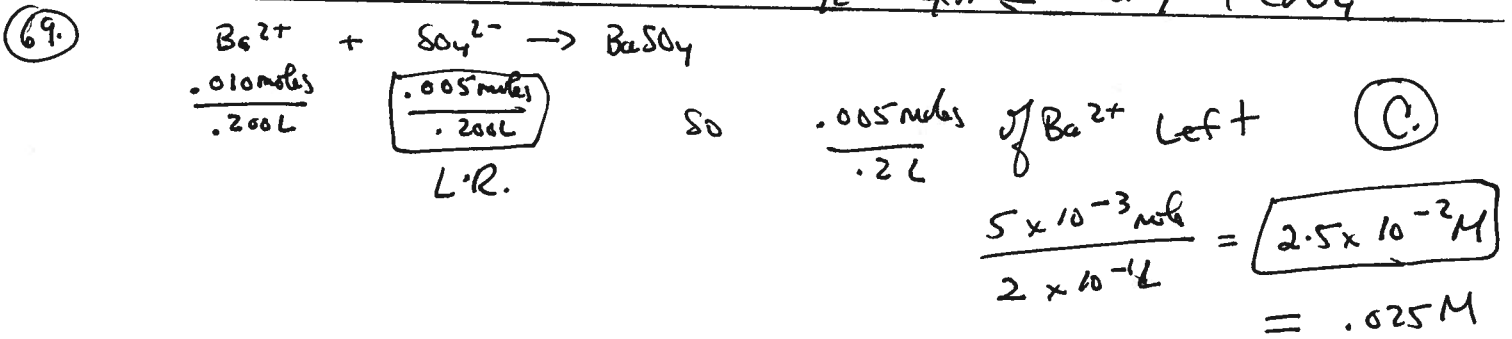
$CN^- > C_2H_3O_2^-$
↑ stronger base



64. the smaller the MWt the faster the effusion $\checkmark P_{gas} \downarrow$



67. $8x \cdot 10^{-12} = 4x^3$; $x^3 = 2 \cdot 10^{-12}$; $x = [Ag_2CrO_4] = \sqrt[3]{2 \cdot 10^{-12}}$
 $Ag_2CrO_4(s) \rightleftharpoons 2Ag^+ + CrO_4^{2-}$

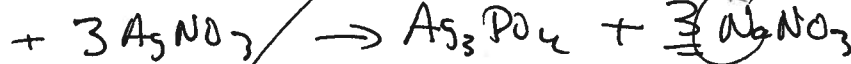
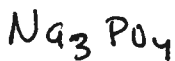


$\frac{.01 \text{ mol}}{.2 \text{ L}}$

$\frac{.01 \text{ moles}}{.2 \text{ L}}$

$\frac{.01 \text{ moles}}{.2 \text{ L}} \left| \frac{\text{mol } NO_3^-}{3 \text{ mol } AgNO_3} \right| =$

spectator!



$\frac{.01 \text{ mol}}{.2 \text{ L}}$

$\frac{.01 \text{ moles}}{.2 \text{ L}}$

$\frac{.0033 \text{ moles}}{.2 \text{ L}}$ Formed

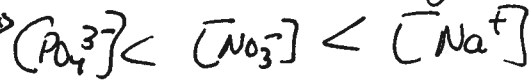
$\frac{.01 \text{ mol}}{.2 \text{ L}}$

$\frac{.01 \text{ moles}}{.2 \text{ L}} \left| \frac{3 \text{ moles } Na^+}{1 \text{ mol}}$

.0033 moles react!

(A)

Forms ppt



71. Add HCl to precipitate the Pb^{2+} ions!

(B.)

(1999)

72. hydrate $\xrightarrow{\text{Heat}}$ anhydrous salt + H_2O

62%

38%

(B.)

49%

51%

correct value

* Since the measured ~~value~~ salt after heating was 62% there must have been some water with the salt. In other words the hydrate was not heated long enough

73. $(10.0 \text{ mL})(6.00 \text{ M}) = (.500 \text{ M})V_2$; $V_2 = \frac{60}{.5} = \frac{600}{5} = \underline{\underline{120 \text{ mL}}}$

So 110 mL must be added to the 10 mL to equal

(D.)

74. Look for the substance w/ the greatest MW

(A)

75. Look for liquids w/ similar IM forces

(D.)