

Practice test 4 Key

FIVE STAR.

1 e

2 b

3 c

4 e

5 e

6 a

7 a

8 d

9 d

10 b

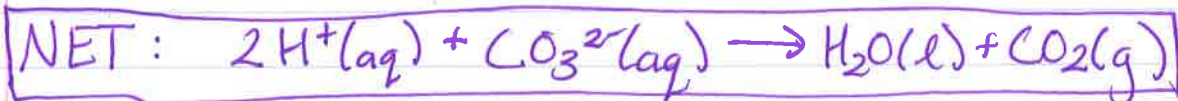
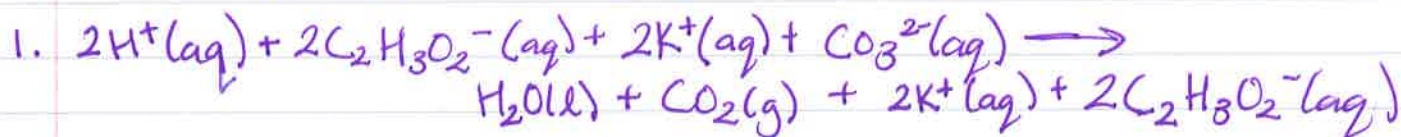
11 a

12 c

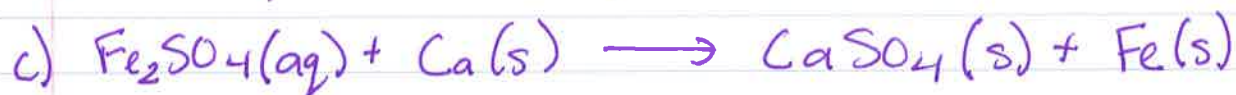
13 b

FIVE STAR.

↓ Phases, charges, ALL subscripts Matter! $2H^+(aq) \neq H_2(g)$ or $2H(aq)$



FIVE STAR.



FIVE STAR.

3a) -3

b) \emptyset

c) -2

d) N

e) O_2

Problems

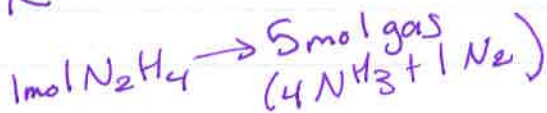
1. ① ? moles gas needed?

$$n = \frac{PV}{RT} = \frac{.75 \text{ atm} \cdot 5.25 \text{ L}}{.08206 \frac{\text{L} \cdot \text{atm}}{\text{mol} \cdot \text{K}} \cdot 298 \text{ K}}$$

$$n = .161 \text{ mol gas}$$

② stoic! $.161 \text{ mol gas} \left(\frac{1 \text{ mol N}_2\text{H}_4}{5 \text{ mol gas}} \right) \left(\frac{30.02 \text{ g N}_2\text{H}_4}{1 \text{ mol N}_2\text{H}_4} \right) \left(\frac{1 \text{ mL}}{1.02 \text{ g}} \right)$

$$= .9478 \text{ mL} \Rightarrow \boxed{.95 \text{ mL}}$$



b) $P_{\text{TOT}} = .75 \text{ atm}$

$$X_{\text{N}_2} = \frac{1 \text{ mol N}_2}{5 \text{ mol total}} \Rightarrow .20$$

$$P_{\text{N}_2} = .20 \times .75 \text{ atm} = \boxed{.19 \text{ atm N}_2}$$

1. ← again? ☺

$$\Delta H = [2(-92 \text{ kJ}) + -814 \text{ kJ}] - [-364 \text{ kJ} + 2(-286 \text{ kJ})]$$

$$\boxed{= -62 \text{ kJ}}$$

2 flip Rxn 1: $\Delta H = -183 \text{ kJ}$

add 2x Rxn 2: $\Delta H + 66 \text{ kJ}$

$$\boxed{\Delta H_{\text{RXN}} = -117 \text{ kJ}}$$

3

$$q_{\text{iron}} = 25 \text{ g} \times .449 \frac{\text{J}}{\text{g} \cdot ^\circ\text{C}} \times (T_f - 398 \text{ K})$$

$$q_{\text{H}_2\text{O}} = 25 \text{ g} \times 4.18 \frac{\text{J}}{\text{g} \cdot ^\circ\text{C}} \times (T_f - 298 \text{ K})$$

set $q_{\text{iron}} = -q_{\text{H}_2\text{O}}$
solve for T_f

$$\boxed{T_f = 308 \text{ K}}$$

307.7 K
from calc.
Don't worry about
sf, I'll take
either