

<input type="checkbox"/> 100	<input type="checkbox"/> 90	<input type="checkbox"/> 80	<input type="checkbox"/> 70	<input type="checkbox"/> 60
<input type="checkbox"/> 50	<input type="checkbox"/> 40	<input type="checkbox"/> 30	<input type="checkbox"/> 20	<input type="checkbox"/> 10
<input type="checkbox"/> 9	<input type="checkbox"/> 8	<input type="checkbox"/> 7	<input type="checkbox"/> 6	<input type="checkbox"/> 5
<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0

(T) (F) KEY

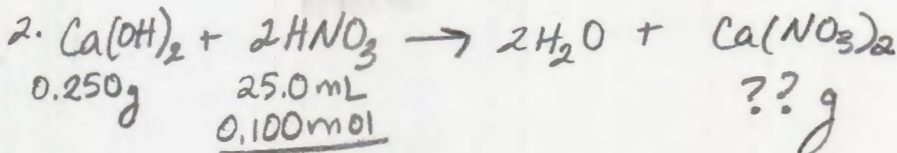
 % 2 3 1 A B C D 2 A B C D E3 A B C D E4 A B C D E5 A B C D E6 A B C D E7 A B C D E8 A B C D E9 A B C D E10 A B C D E11 A B C D E12 A B C D E13 A B C D E14 A B C D E15 A B C D E16 A B C D E17 A B C D E18 A B C D E19 A B C D E20 A B C D E21 A B C D E22 A B C D E23 A B C D E24 A B C D E25 A B C D E26 A B C D E27 A B C D E28 A B C D E29 A B C D E30 A B C D E31 A B C D E32 A B C D E33 A B C D E34 A B C D E35 A B C D E36 A B C D E37 A B C D E38 A B C D E39 A B C D E40 A B C D E41 A B C D E42 A B C D E43 A B C D E44 A B C D E45 A B C D E46 A B C D E47 A B C D E48 A B C D E49 A B C D E50 A B C D E

IMPORTANT	
USE NO. 2 PENCIL ONLY	TO USE SUBJECTIVE SCORE FEATURE: • Mark total possible subjective points • Only one mark per line on key • 100 points maximum
• MAKE DARK MARKS	
• ERASE COMPLETELY TO CHANGE	
• EXAMPLE: (A) (B) (C) (D) (E)	EXAMPLE OF STUDENT SCORE: 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

PART 1

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$$1. 500. \text{ mL} \times \frac{1 \text{ L}}{1000 \text{ mL}} \times \frac{0.125 \text{ mol}}{\text{L}} \times \frac{115.79 \text{ g Li}_3\text{PO}_4}{1 \text{ mol Li}_3\text{PO}_4} = 7.24 \text{ g Li}_3\text{PO}_4$$



limiting reactant problem

$$0.250 \text{ g Ca(OH)}_2 \times \frac{1 \text{ mol Ca(OH)}_2}{74.1 \text{ g Ca(OH)}_2} \times \frac{1 \text{ mol Ca(NO}_3)_2}{1 \text{ mol Ca(OH)}_2} \times \frac{164.09 \text{ g Ca(NO}_3)_2}{1 \text{ mol Ca(NO}_3)_2} = 0.554 \text{ g Ca(NO}_3)_2$$

$$25.0 \text{ mL} \times \frac{1 \text{ L}}{1000 \text{ mL}} \times \frac{0.100 \text{ mol HNO}_3}{1 \text{ L}} \times \frac{1 \text{ mol Ca(NO}_3)_2}{2 \text{ mol HNO}_3} \times \frac{164.09 \text{ g Ca(NO}_3)_2}{1 \text{ mol Ca(NO}_3)_2}$$

$$\text{HNO}_3 \text{ is LR} = 0.205 \text{ g Ca(NO}_3)_2$$

$$3. P = ? \quad T = 22^\circ\text{C} + 273 = 295 \text{ K}$$
$$V = 40.0 \text{ L} \quad n = 2.50 \times 10^3 \text{ g O}_2 \times \frac{1 \text{ mol O}_2}{32.00 \text{ g O}_2} = 78.1 \text{ mol O}_2$$

$$P = \frac{nRT}{V} = \frac{(78.1 \text{ mol})(0.08206 \frac{\text{L}\cdot\text{atm}}{\text{mol}\cdot\text{K}})(295 \text{ K})}{40.0 \text{ L}} = 47.3 \text{ atm}$$

$$4. \chi_i = \frac{n_i}{n_{\text{total}}} = \frac{0.157 \text{ mol O}_2}{0.157 \text{ mol} + 0.241 \text{ mol}} = 0.394$$

$$P_i = \chi_i P_{\text{total}} = (0.394)(745 \text{ mmHg}) \left(\frac{1 \text{ atm}}{760 \text{ mmHg}} \right)$$

$$P_{\text{O}_2} = 0.386 \text{ atm}$$