

SC111: General Chemistry

NAME _____

Quiz 1 **Circle your section**

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1. a. Balance the following equation. (4 points)



Formula Masses 74.09 212.27 502.31 56.11

- b. If 10.0 g of Ca(OH)_2 completely react with 10.0 g of K_3PO_4 , how much $\text{Ca}_5(\text{PO}_4)_3(\text{OH})$ is formed? (8 points)

- c. Which is the limiting reagent? (2 points)

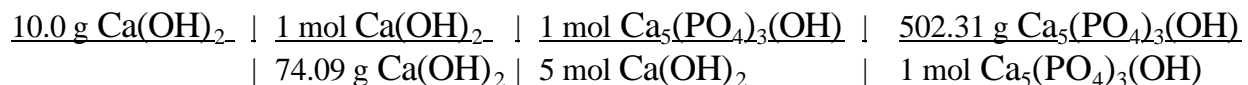
- d. How much of the excess reagent would remain if one had a complete reaction? (4 points)

- e. If 6.08 g of $\text{Ca}_5(\text{PO}_4)_3(\text{OH})$ were isolated, what is the percent yield? (4 points)

Quiz 1 Key



b.



13.56 g of $\text{Ca}_5(\text{PO}_4)_3(\text{OH})$ formed from 10.0 g Ca(OH)_2 with excess K_3PO_4 .



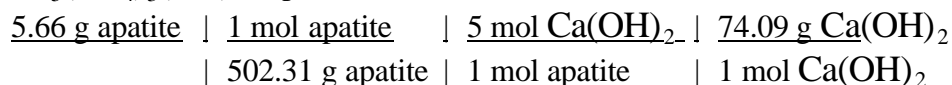
7.90 g of $\text{Ca}_5(\text{PO}_4)_3(\text{OH})$ formed from 10.0 g K_3PO_4 with excess Ca(OH)_2 .

7.90 g of $\text{Ca}_5(\text{PO}_4)_3(\text{OH})$ are formed from complete reaction.

c. **K_3PO_4 is the limiting reagent.**

d. One way of doing it:
13.56 g potential mass of $\text{Ca}_5(\text{PO}_4)_3(\text{OH})$ with 10.0 g Ca(OH)_2
- 7.90 g potential mass of $\text{Ca}_5(\text{PO}_4)_3(\text{OH})$ with 10.0 g K_3PO_4
5.66 g of $\text{Ca}_5(\text{PO}_4)_3(\text{OH})$ product unfulfilled by limited reaction.

$\text{Ca}_5(\text{PO}_4)_3(\text{OH}) = \text{apatite}$



4.17 Ca(OH)_2 excess.

e. $\frac{\underline{6.0 \text{ g apatite isolated}}}{7.90 \text{ g apatite theoretical}} \times 100\% = \mathbf{76\% \text{ Yield}}$