1) Since $Ba_3(PO_4)_2$ is a very finely divided solid some is lost during filtration. This is especially true if a coarse filter paper is used. How would this affect the percent error of the experiment?

2) A mixture 14.930 consisting of $Na_3PO_4 \cdot 12H_2O$ and $BaCl_2 \cdot 2H_2O$ was stirred in water it gave 6.020 grams of the precipitate $Ba_3(PO_4)_2$ what was the percentage of $BaCl_2 \cdot 2H_2O$ in the mixture.

Answer:

1) If a significant amount of solid will be lost through the course filter, the percent error of the experiment will rise.

2) $2Na_3PO_4 \cdot 12 H_2O + 3BaCl_2 \cdot 2 H_2O = Ba_3(PO_4)_{2(s)} + 6 NaCl_{(aq)} + 30 H_2O_{(l)}$

   $n = m/M$

   $M (Ba_3(PO_4)_2) = 601.933$ g/mol

   $n (Ba_3(PO_4)_2) = 6.020 / 601.933 = 0.010$ mol

   $n (BaCl_2 \cdot 2 H_2O) = 3 \cdot n (Ba_3(PO_4)_2) = 3 \cdot 0.010 = 0.030$ mol

   $M (BaCl_2 \cdot 2 H_2O) = 244.266$ g/mol

   $m (BaCl_2 \cdot 2 H_2O) = n \cdot M = 0.030 \cdot 244.266 = 7.328$ g

   $\% (BaCl_2 \cdot 2 H_2O) = (7.328/14.930) \cdot 100 = 49.082\%$