PLEASE ATTEMPT THE FOLLOWING PROBLEMS
WHILE I RETURN THIS MASSIVE PILE OF PAPERS.

A sample of tin(IV)phosphate was analyzed in a laboratory.

A) If the sample contained 2.541 grams of phosphorus, what was the mass of the original sample of tin(IV)phosphate?

B) If one were to purify the tin from this sample, how many electrons would have to be provided to the tin in order to return it to its elemental state?

C) If the oxygen was removed from this sample, how many molecules of gasoline (octane, C_8H_{18}) could be fully combusted with this oxygen?

D) In problem C, how many grams of carbon dioxide would result from this combustion?

(A) 736.01 grams/mole $\quad \frac{123.88\ g\ P}{736.01\ g\ Sn_3(PO_4)_4} \times 100 = 16.831\%\ P$

X grams $Sn_3(PO_4)_4\ (.1683) = 2.541\ g\ P$

$X = 15.10\ g\ Sn_3(PO_4)_4$

(B) $\frac{356.13}{736.01} \times 100 = \%\ \text{comp of Sn} = 48.387\%\ Sn$

$15.10\ g\ Sn_3(PO_4)_4\ (.48387) \times \frac{1\ mol\ Sn}{118.71\ g\ Sn} \times \frac{4\ mol\ e^-}{1\ mol\ Sn} \times \frac{6.022 \times 10^{23}\ e's}{1\ mol\ e^-}$

$= 1.483 \times 10^{23}$ electrons $\quad Sn^{4+} + 4e^- \rightarrow Sn(s)$

(C) $\frac{256.00}{736.01} \times 100 = \%\ O = 34.782\%\ O \quad 15.10\ (.34782) = 5.252\ g\ O$

$2C_8H_{18} + 25O_2 \rightarrow 16CO_2 + 18H_2O$

(C) cont $5.252\text{ g O} \times \frac{1\text{ mol O}}{16.00\text{ g O}} \times \frac{1\text{ mol O}_2}{2\text{ mol O}} \times \frac{2\text{ mol C}_8\text{H}_{18}}{25\text{ mol O}_2}$

$\times \frac{6.022 \times 10^{23}\text{ molecules of C}_8\text{H}_{18}}{1\text{ mol C}_8\text{H}_{18}} = 7.907 \times 10^{21}$ octane molecules

(D) 7.907×10^{21} octane molecules $\times \frac{1\text{ mol C}_8\text{H}_{18}}{6.022 \times 10^{23}\text{ octane}} \times \frac{16\text{ mol CO}_2}{2\text{ mol C}_8\text{H}_{18}} \times \frac{44.01\text{ g CO}_2}{1\text{ mol CO}_2}$

$= \boxed{4.623\text{ g CO}_2}$