

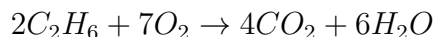
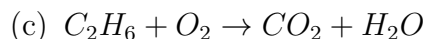
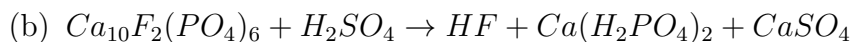
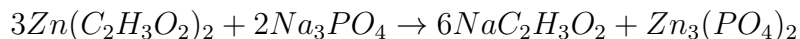
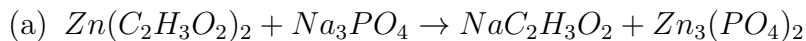
Problem Set Chapter 3, Part 2

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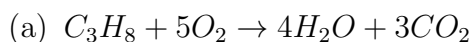
Instructor: Mr. Morgan

September 15, 2020

1. Balance the following:



2. Calculate the number of grams of both products when 17.8[g] of C_3H_8 is combusted.



$$\frac{17.8[\text{g}]}{44[\text{g mol}^{-1}]} = .4[\text{mol}_{C_3H_8}] \rightarrow 2[\text{mol}_{O_2}], 1.6[\text{mol}_{H_2O}], 1.2[\text{mol}_{CO_2}]$$

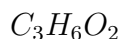
$$1.6[\text{mol}] \cdot 18[\text{g mol}^{-1}] = 28.8[\text{g}]$$

$$1.2[\text{mol}] \cdot 44[\text{g mol}^{-1}] = 52.8[\text{g}]$$

3. A 0.1204[g] sample of carboxylic acid (containing C, O, and H) is burned in oxygen to yield 0.2147[g] of carbon dioxide and 0.0884[g] of water. Calculate the empirical formula.

$$.2147 \cdot \frac{12}{44} = .059[\text{g}_C], .0884 \cdot \frac{2}{18} = .0098[\text{g}_H], .1204 - .0098 - .059 = .0516[\text{g}_O]$$

$$\frac{.059}{12} = .0049[\text{mol}_C], \frac{.0098}{1} = .0098[\text{mol}_H], \frac{.0516}{16} = .0032[\text{mol}_O]$$



4. Phenol contains C, H, and O. Combustion of 2.136[mg] of phenol gives 5.993[mg] of CO_2 and 1.227[mg $_{H_2O}$]. What is the simplest formula?
5. Kerosene ($C_{14}H_{30}$) has a density of 0.763[g mL $^{-1}$]. How many grams of carbon dioxide are produced by the combustion of 3.785[L] of kerosene?
6. How many liters of CH_3CH_2OH (density = 0.789[g mL $^{-1}$]) must be consumed to produce 25[L] of CH_3CHO (density = 0.788[g mL $^{-1}$])?

