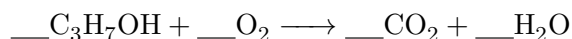


Name: \_\_\_\_\_

Date: \_\_\_\_\_

- [5 pt] 1. Given the following reaction, balance the equation, and then provide the mole to mole ratio of the indicated molecules.



(a)  $\text{CO}_2$  to  $\text{C}_3\text{H}_7\text{OH}$  1(a) \_\_\_\_\_

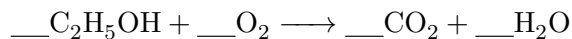
(b)  $\text{C}_3\text{H}_7\text{OH}$  to  $\text{O}_2$  1(b) \_\_\_\_\_

(c)  $\text{O}_2$  to  $\text{CO}_2$  1(c) \_\_\_\_\_

(d)  $\text{H}_2\text{O}$  to  $\text{C}_3\text{H}_7\text{OH}$  1(d) \_\_\_\_\_

(e)  $\text{CO}_2$  to  $\text{O}_2$  1(e) \_\_\_\_\_

- [10 pt] 2. Answer the following questions about the reaction below:



(a) How many moles of  $\text{CO}_2$  is produced from 8.5 mol of  $\text{C}_2\text{H}_5\text{OH}$ ? 2(a) \_\_\_\_\_

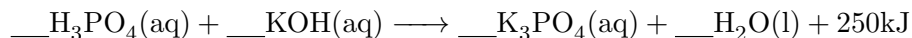
(b) How many moles of  $\text{O}_2$  is required to combust 2.5 moles of  $\text{C}_2\text{H}_5\text{OH}$ ? 2(b) \_\_\_\_\_

(c) If you need to make 10.0 moles of  $\text{H}_2\text{O}$ , how many moles of  $\text{C}_2\text{H}_5\text{OH}$  are required? 2(c) \_\_\_\_\_

(d) How many moles of  $\text{CO}_2$  is produced from 8.5 mol of  $\text{O}_2$ ? 2(d) \_\_\_\_\_

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[15 pt] 3. Answer the following questions about the reaction below:



(a) How many moles of  $\text{H}_3\text{PO}_4$  are required to react with 15.0 mols of  $\text{KOH}$ ? 3(a) \_\_\_\_\_

(b) How many moles of  $\text{H}_3\text{PO}_4$  are required to produce 12.0 moles of  $\text{K}_3\text{PO}_4$ ? 3(b) \_\_\_\_\_

(c) How many moles of  $\text{KOH}$  are required to produce 8.50 moles of  $\text{K}_3\text{PO}_4$ ? 3(c) \_\_\_\_\_

(d) How many moles of  $\text{H}_2\text{O}$  are produced when  $2.5 \times 10^{-1}$  mols of  $\text{H}_3\text{PO}_4$  react? 3(d) \_\_\_\_\_

(e) How many moles of  $\text{KOH}$  are required to produce  $2.5 \times 10^8$  J of heat? 3(e) \_\_\_\_\_

(f) Challenge Question: If you want to make 10. moles of  $\text{H}_2\text{O}$  how many moles of  $\text{H}_3\text{PO}_4$  and how many moles of  $\text{KOH}$  will you need? 3(f) \_\_\_\_\_

. 3(f) \_\_\_\_\_

(g) Challenge Question: If you have 6.0 mols of  $\text{H}_3\text{PO}_4$  and 6.0 moles of  $\text{KOH}$  how many moles of  $\text{K}_3\text{PO}_4$  can you produce? 3(g) \_\_\_\_\_