Name KEY

Date _____

Due Date _____

Mark _____/18

Correct and Hand in Again by _____

Chemistry 12

Hand In Assignment #1-Calculating Rates

All work must be shown. Include proper units in your work and in your answers. Answers need to be in the correct number of significant digits as justified by the data.

1. Consider the reaction:

$$C_2H_{4\,(g)} + 3O_{2(g)} \rightarrow 2CO_{2(g)} + 2H_2O_{(g)}$$

At certain conditions 0.26 moles of O_2 is consumed in 3.0 minutes.
What is the rate of production of CO_2 in g/s ? (3 marks)

$$\frac{0.26\ mol\ O_2}{3.0\ min} \times \frac{2\ mol\ CO_2}{3\ mol\ O_2} \times \frac{44.0\ g\ CO_2}{1\ mol\ CO_2} \times \frac{1\ min}{60\ s} = 0.042\ g\ CO_2/s$$

(0.08667) (0.05778) (2.542)

3

Answer 0.042 g CO_2/s

2. Consider the reaction:

$$C_2H_5OH_{\,(l)} + 3O_{2(g)} \rightarrow 2CO_{2(g)} + 3H_2O_{(g)}$$

3

At certain conditions 13.44 L of CO_2 is produced in 180.0 s at STP.
What is the rate of consumption of C_2H_5OH in g/min ? (3 marks)

$$\frac{13.44\ L\ CO_2}{180.0\ s} \times \frac{1\ mol\ CO_2}{22.4\ L\ CO_2} \times \frac{1\ mol\ C_2H_5OH}{2\ mol\ CO_2} \times \frac{46.0\ g\ C_2H_5OH}{1\ mol\ C_2H_5OH} \times \frac{60\ s}{1\ min}$$

(0.07467) (0.00333) (0.001667) (0.07667)

6/6

Answer = 4.60 g C_2H_5OH/min