

### Quiz 3

ENGR 340-Introduction to Environmental Engineering

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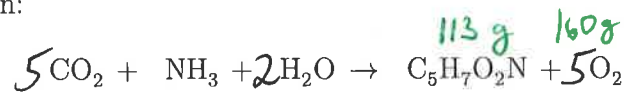
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KEY

Name:

1. (8 pts) Algae do not "like" high concentrations of oxygen (i.e., their growth is inhibited at dissolved oxygen concentrations that are higher than 8 mg/L).

When algae ( $C_5H_7O_2N$ ) grow, they produce oxygen, as shown in the following *simplified* and unbalanced equation:



Assume that all of the oxygen produced in the reaction remains in the water in a bioreactor, and that the reactor has a volume of 1 million  $m^3$ . Calculate the concentration of oxygen in the water.

ASSUME 5 tonne ALGAE

$$5 \text{ tonne algae} \times \frac{160 \text{ g OXYGEN}}{113 \text{ g ALGAE}} = 7.1 \text{ tonne OXYGEN}$$

$$\frac{7.1 \text{ tonne OXYGEN}}{10^6 \text{ m}^3 \text{ H}_2\text{O}} \times \frac{10^6 \text{ g}}{\text{tonne}} = 7.1 \text{ g/m}^3$$

ALSO 7 mg/L

2. (2 pts) Define the term *conservative compound*.

Chemical w/ no formation or loss due to a reaction.