

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

CEE 370

Fall 2019

## Homework #5

### 1. Problem 5-1

A population of purple rabbits lives on the island of Zulatop. The rabbits have a net growth rate of  $0.09 \text{ yr}^{-1}$ . At the present time there are 176 rabbits on the island. What is the predicted number of rabbits 5, 10, and 20 years from now? Use the simple exponential growth equation to calculate the number of rabbits. **In addition, make a plot of purple rabbit population versus time for a period from 0 to 25 years.**

### 2. Problem 5-2

Recalculate the number of purple rabbits if the carrying capacity is 386 and you use the logistic equation. Assume the number of rabbits at the present time and use the same intervals. **In addition, make a plot of purple rabbit population versus time for a period from 0 to 25 years.**

### 3. Problem 5-3.

The concentration of diazinon has been measured to be  $23.3 \text{ } \mu\text{g/L}$  in Lake Pekko. The bioconcentration factor for diazinon is  $337 \text{ L/kg}$ . What is the expected concentration of diazinon in fish living in Lake Pekko?

### 4. Problem 5.4.

The bioconcentration factor for bis(2-ethylhexyl)phthalate, a commonly used plasticizer, in the organism *Daphnia* is  $5200 \text{ L/kg}$ . If the concentration of bis(2-ethylhexyl)phthalate in a lake is  $3.6 \text{ } \mu\text{g/L}$ , estimate the concentration of bis(2-ethylhexyl)phthalate in *Daphnia* in units of  $\mu\text{g/kg}$ .

*Assigned: 25 Oct 19*

*Due: 1 Nov 19*

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

**Answer Page**

Fill in the boxes with the correct answer.

You will only get credit for a problem if you (1) fill in the box with the correct answer, (2) your answer is legible, and (3) you include attach page(s) with calculations backing up your answer, when requested for the problem.

Problem #

1	5 yr		Rabbits
	10 yr		Rabbits
	20 yr		Rabbits
	plot		

1	5 yr		Rabbits
	10 yr		Rabbits
	20 yr		Rabbits
	plot		

3		µg/kg
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4		µg/kg
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