

YOUR NAME _____ SECTION TIME _____

The midterm will look like this. It will have these sections and these instructions for each section. I have given you a couple of examples of each type of question so you can get the idea. The real midterm will of course have the listed number of questions.....

EEMB 40: Ecology of Disease – Midterm – 300 points (30% of total for the class)

5 Multiple choice questions. 10 points each = 50 points in total. There is a single correct answer for each question – pick the BEST answer and CIRCLE THE LETTER.

- 1 *‘The death of a patient represents a failure of healthcare.’*
This could be said of many diseases but it is **MOST** true of which disease?
- A. Cholera
 - B. Bubonic plague
 - C. Tuberculosis
 - D. Rabies
- 2 In the most basic SIR model which of the following statements is **INCORRECT**?
- A. the model assumes that the total population size is fixed
 - B. the model assumes random mixing between susceptibles and infecteds
 - C. movement from the susceptible class to the infectious class occurs at a rate $\beta S I$
 - D. movement from the infectious class to the removed class occurs at a rate $\gamma I R$

(These two questions probably span the range of likely difficulties. The first one is rather easy, you might remember the quote and even if you didn't you should know enough about these diseases to make the answer fairly obvious. The second is harder but like many harder questions you should still be able to eliminate certain answers)

Presidential Enquiry. Questions in this section are worth 10 points. 100 points in total for this section. For questions 1-6 the president has underlined words and phrases in his briefing document and needs you, as science advisor, to explain them. Note that some questions require you to explain two terms.

1. Incidence rates for AIDS vary greatly between countries.
2. Penicillin is ineffective against the bacteria because it is a gram- species.

Etc

For questions 7-10 the president has written questions in the margin of his document that you should answer. Use no more than two sentences to answer each of these questions. Your ability to answer these succinctly, with a minimum of jargon, is very important. These questions ask for your opinion AS SCIENCE ADVISOR. You will be graded not only on the answer you give but on the justification you give. Please write all answers clearly in the space provided. I know it is short but the President is a busy man, don't write an essay just give your opinion and justify it.

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7. *A group of senators are suggesting legislation that would require ALL children to be vaccinated in the US (currently vaccination is mandatory only if children attend public schools). What are the public health implications of this?*

Short answer questions. 50 points each = 150 points. Answer any THREE of the following questions. Please write legibly and restrict yourself to the space provided on the next two pages. Two or three sentences should be sufficient. Write the question number in the box at the top.

1. What is an epidemic curve and what can it tell you about a disease?
2. How does Penicillin actually kill bacteria, i.e. what is the mechanism of action?
3. R_0 can be defined both mathematically and verbally. Give both definitions, defining any symbols you use.

In the exam there will be a choice of questions here- you will pick 3 questions to answer from a total of five or six provided. Answers will all be written in boxes of the size shown below.

Write question number here:	Do not write here.