

Bio 067, Fall 2007: Practice questions for final exam

What is going to be on the exam?

Part (1/2-2/3) of the exam will be on the material **since the midterm, including final projects**. For the **final projects** you will have a **choice of questions**.

Everyone's presentation will be represented **at least once** on the exam. If a question is **solely** about **your project** (as opposed to being part of a compare/contrast type of question), you **may not** select that question.

Part (1/3-1/2) of the exam will require you to **draw on ideas** we have been talking about **all semester**, in part to **analyze a hypothetical situation**.

*If a certain lecture or final project is **not** represented among these practice questions, there **may still be a question** about it on the exam.*

Suggestions for how to study:

1. Look back at your midterm and practice questions to get a sense of the **type of question** I will be asking on the final. Re-read my **helpful hints** for **biological problem solving**.

2. Start to study.

Focus on the **main topics** covered in class, particularly the ideas we have explored **since the midterm**. As you go through your notes, **outline** the major points and **write down** both **ideas you don't understand**/found confusing during lecture **and questions** *you* imagine could turn up on an exam. **Consult readings** to see if they shed light on any of these issues.

Read the summaries of the final projects and any **notes** you took--**write down** the **major ideas** of each project. If you can't remember 3-4 main ideas of the poster, come **check it out** in the **hallway** outside my office on the top floor of **Druckenmiller**. **Email** any questions to one of the **authors**.

Also, make sure you **understand the midterm questions and answers** (the pre-midterm practice questions may help, too).

3. Work on these practice questions and the **final exam from Fall, 2003** (which I will post on Mon., Dec. 10). Now that you have studied, **try to outline** and then **write complete answers**. Consult your notes, readings, group summaries etc. **only *after*** you have tried to write an answer.

4. Meet with other people in the class to discuss your answers and questions you have.

5. Come to a review session (Tues., Dec. 11 from 8-10 PM, Druckenmiller 110) with **specific ideas** you would like clarified and **questions** you want to discuss. As before, I will not prepare a presentation for the review session.

1. Put the following **diseases** in **2-4 categories** and **explain** your designations. Note that some schemes may require putting a disease in more than one category.

Make sure that your **categories** are **parallel**.

A parallel scheme: 1: Bigger than a breadbox, 2: Smaller than a breadbox.

An invalid scheme: 1: Endemic in Africa, 2: Flu-like symptoms, 3: Complex life cycle.

A. African sleeping sickness

B. Bovine spongiform encephalopathy

C. Cervical cancer

D. Dengue Fever

E. Guinea worm disease

F. Influenza

G. Malaria

H. Meningitis

I. Walking pneumonia

J. West Nile Fever

2. **Preventative measures** for a number of diseases include wearing **long pants** and **long-sleeved shirts** and using **bug repellent**. Name **four (4) diseases** for which these measures are recommended and **state why** these actions are a **good idea**.

3. How can **cultural practices affect health**? Give at least **two (2) examples** from class or final project presentations.

4. We tend to think of **bacteria** as ne'er-do-well, **havoc-wreaking**, worthless creatures, yet advertisers make a strong pitch for yogurt with **live *Acidophilus*** cultures. **Why** can it be to **our advantage** to eat yogurt **containing** this **bacterium**?

5. One argument people use **against vaccination** for a disease (e.g. Lyme disease) is that **prior vaccination** can make it **difficult to detect subsequent infections** by a microbe, if the vaccine is not 100% effective.

A. **What type of diagnostic technique** for infection would be **obscured by vaccination** and **why**?

B. Is there **another technique** that might be useful to **distinguish** people/animals with **active microbial infections** from those who were **vaccinated**?

6. Give **three (3)** examples of how a **microbe** can **evade** the host's **immune system**. For each, describe the **evasion strategy** and a **microbe** that makes use of that strategy.

1.

2.

3.

6. Why might **El Niño** be linked to a **hantavirus outbreak** in the southwestern U.S.? Consider different **factors affecting** the **spread** of this disease.

7. Why are blood banks worried about **mad cow disease**? **Explain** the **nature** of the **etiological agent**, **how** it **differs** from **other infectious agents** we have studied, and **why** it might be **difficult to detect** once it enters the blood supply.

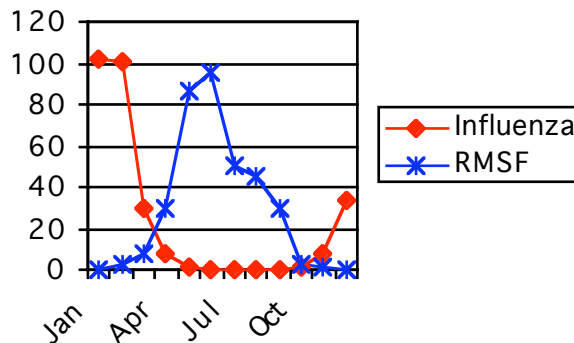
8. What are the **advantages** and **disadvantages** of **smallpox** as a **biological weapon**? Give at least **two (2)** advantages and **two (2)** disadvantages.

Here are some examples of group project questions from Fall, 2001, to give you a flavor for the level of detail required (note that RMSF is a tick-borne disease).

i. Give **three (3) factors** that contribute to **low life expectancy** in **Afghanistan**. Describe **why** each factor has this effect.

ii. **Compare and contrast** the **beginning** of the **AIDS epidemic** in the **United States** and the **current AIDS epidemic** in **Indonesia**. Include at least **two (2) similarities** and **two (2) differences**.

iii. This graph depicts the relative number of cases (y-axis) of influenza and Rocky Mountain Spotted Fever over the course of a year (x-axis). **Explain why** these two diseases **peak at different times**, in the context of **biological** and **environmental factors** for each disease. (Ignore the size of the peaks--there are in fact many more influenza cases per year than RMSF cases.)



iv. You spend spring break one year camping in the Yucatan peninsula in southeast **Mexico**. You cool off in lakes during the day and you make sure to **boil all your drinking water**. The next summer you go to **Ethiopia** and hike along the Omo River. Not only must you boil the water before drinking it, you are advised **not to swim** in the river and to **boil water before taking a bath**.

A. **Why** do you need to **boil** the **drinking** water in **Mexico**? Name at least **2 threats** to your health if you do not.

B. **Why** do you need to **boil** the **bath** water in **Africa**? What **different** type of threat does this reflect?