

Read each question carefully and don't hesitate to ask if a question seems unclear. If possible, answer each question in the space provided, but if needed, continue on the back. If you use a drawing as part of your answer, be sure to also include a written explanation. These questions have specific answers, although for some, more than one answer is possible. To receive full credit you must clearly and fully answer the question being asked. The points for each question are noted in parentheses totaling 103 points.

1. When DDT was in common use, would you expect grizzly bears to have had high levels of DDT in their bodies? Why or why not? (14 pts)

No, they eat mostly plants and not from higher in the food chain like eagles.

2. Why is the flu vaccine given last year ineffective against the swine flu? (12 pts)

Vaccines are specific for specific pathogens/viruses. The swine flu is not recognized by the memory B-cells that were induced via the vaccine.

3. What is one way an introduced species can cause a native species to go extinct? (12 pts)

Any of: Competing for resources. Predation.

4. In harvester ants: A) What criteria about patrol ants do foragers use to determine if it is safe to leave the nest? (6 pts) B) How did researchers test this? (6 pts)

A) The rate of return to the nest. B) They added beads coated with patrol ant molecules at different rates to see when the foragers left. OR They measured how long after increases in patrol ant return the foragers left.

5. Would grizzly bears or ants be more at risk from having a dramatic drop in population due to an infectious disease? Why? (14 pts)

Ants. They live in large groups that make it easier for the pathogen to move from ant to ant. Grizzlies live in solitude, so without coming into contact with each other they will not spread the disease.

6. Is this a graph of a human population with many educated females? Why or why not? (12 pts)

No, there are many more young than older individuals. Female education tends to decrease the birth rate.

7. What are **two** different changes that would allow goods made from recycled material to be cheaper than goods made from raw material? Explain how each change will allow goods made from recycled materials to be less expensive than goods made from raw materials. (12 pts)

Any of: Increases in landfill fees that will make waste disposal more expensive and recycling more cost effective. Decrease subsidies for the extraction of raw materials or increase subsidies for recycling so recycled goods can compete. Help offset the cost of setting up new plants to process the recycled material, or wait for these costs to be absorbed by the manufacturers.

8. Two wilderness areas of 1000 acres are both suffering from a drought. After the drought, one of the areas has 85% of the biodiversity it had before the drought, while the other area only has 40% of its original biodiversity remaining. Why has one area maintained much of its biodiversity while the other had a much greater loss of biodiversity? (12 pts)

One is fragmented and had less biodiversity to begin with, and areas with lower biodiversity are typically more affected by disturbances.

Bonus: If you saw a population of bald eagles with mostly adults and very few young, would that indicate that this population is being affected by DDT? Why or why not? (3 pts)

Yes, DDT has the most effect on reproduction causing fragile egg syndrome. The adults may appear healthy, but reproduction rates will be low.

Note: Everyone who attended the movie received 3 bonus points, but only a maximum of 3 points.