EOC Preparation Answer Key

1. **C** (negative feedback tries to keep the system balanced)
2. **D**
3. **B** (more data=more reliable)
4. Written—Conclusion

> **Sample response—note: there are other correct ways to earn a 2-point response.**
> According to the data, normally the higher the pH, the higher the amount of foam produced (although when the pH hits 9, the amount of foam produced dropped dramatically.) When the pH is 6, the least amount of foam was produced with only 24 milliliters of foam on average. When the pH was 8, the most foam was produced with 42 milliliters on average. As the pH raised by 2, there were 18 more milliliters of foam produced because the protein catalase works better at a pH of 8 since this fits the environment for the enzyme.

5. **B**
6. Written-Procedure

> **Sample response—note: there are other correct ways to earn the maximum points.**
> Question: What is the effect of the temperature of potato juice on the time for bubbling to stop after hydrogen peroxide is added?
> 1. Label four graduated cylinders, one for 10°C, 20°C, 30°C, and 40°C.
> 2. Put 10 ml of potato juice at 10°C into the graduated cylinder.
> 3. Do the same (step 2) for each temperature - 20°C, 30°C, and 40°C.
> 4. Add 5 ml of hydrogen peroxide to each cylinder, stir for two seconds and start the timer.
> 5. Stop the timer when all of the bubbling form the reaction ends. Record the time bubbling to stop for each of the four cylinders as trial one.
> 6. Repeat steps 1-5 two times as trial 2 and trial 3.

7. **A**
8. **A**
9. **C**
10. Written—models aren't perfect…

> **Sample response—note: there are other correct ways to earn the maximum points.**
> One way the greenhouse model may lead to unreliable predictions is that greenhouses stay warmer than the garden throughout the day. The garden will cool down more during the evening or even reach freezing temperatures, but the greenhouse won't get so cold. This could mean that the greenhouse plants grow bigger than garden plants because they have a more stable environment to grow.
> Another way the greenhouse model may lead to unreliable predictions is that greenhouses are protected from predators that would try to eat the plant or peppers. The garden plants might get eaten by bugs or rabbits, but the greenhouse plants will not, so the greenhouse plants might grow to be healthier than the garden plants.

11. **D**
12. **C**
13. **9** (720 finches divided by 80 acres)
14. **A** (yes, plants reproduce sexually…seeds and pollen)
15. **A**
16. **B**

17. Written—Scientific Method

> **Sample response—note: there are other correct ways to earn the maximum points.**
> Research the problem: To answer this question I'd need to know what conditions are best for worms, including: what temperature is best for worms? What is the healthiest food for worms? To collect this information I would conduct internet research using scientific websites or ask a master gardener or scientist who specializes in worm research.
> Explore ideas: 1) I would add more food/nutrients to the soil so the worms have easy access to food and would be more likely to reproduce. 2) I would add a protective barrier to the top of the soil so that predators like birds or rodents could not eat worms from the garden soil.

18. **B**
19. **B**
20. **C**
21. **D**
22. **C**
23. **A**
24. **A**
25. Written-conclusion

> **Sample response—note: there are other correct ways to earn the maximum points.**
> Forest Edge Habitat Results: Salmonberry plants grew the best in the forest edge habitat. On average, the forest edge had 16 plants growing per plot. This is possibly because the plants grew in an open area and had access to lots of light, so they were able to do a lot of photosynthesis and grew well as a result.
> Forest Habitat Results: Salmonberry plants grew the worst in the forest habitat. On average, the forest had only 4 plants per plot. These results could be because the salmonberry plants had to compete with the trees in the forest to get water and therefore didn't grow very well because they got less water.

26. **D**
27. **14**
28. Written-constraints

> **Sample response—note: there are other correct ways to earn the maximum points.**
> One constraint: Trapping the bears could be dangerous to the rangers and campers. The bears if not safely and quickly caught could be made angry and attack people as a result. This limitation can be overcome, but there needs to be a careful plan in place to assure the safety of the people involved.
> One constraint: Relocating the bears could take more work than the rangers expect because once the bears are released in a new environment, they might make the journey back to the park because it's the home they know and like. This limitation could be overcome, but the rangers might need to relocate the bears a few times if they return or find a way to keep them in the new habitat.

29. **A**
30. **C**
31. **A**
32. Written-Field Study procedure

Sample response—note: there are other correct ways to earn the maximum points.

Question: How does the total rainfall in different years affect the mass of berries produced by a salmonberry plant? (Note: this is modeled using the procedure on page 18 of the packet!)

1. Go to the salmonberry field study area. Record date, time and temperature.
2. Research the amount of rainfall in the salmonberry study area. Write down the amount of rainfall for the year in the data table.
3. Choose a random salmonberry plant in the study area and pick 10 berries off of the plant.
4. Weigh the berries and record the mass of the berries.
5. Repeat steps 1-3 two times as trial 2 and trial 3.
6. Return to the salmonberry habitat at the same date and time the following year. Repeat steps 2-5 for the second year. Make sure the amount of rainfall is different than the first year.
7. Return to the salmonberry habitat at the same date and time the following year. Repeat steps 2-5 for the third year. Make sure the amount of rainfall is different than the previous years.