

Topic 10

Level 1

1. C
2. B
3. C
4. B
5. A
6. D
7. D
8. C
9. D
10. D
11. A
12. B
13. C
14. C
15. C
16. B

LEVEL 2

1. C
2. C
3. C
4. A
5. B
6. B
7. C
8. B
9. C
10. B

GRID IN

1. 32
2. 461

Free response question

... population. The question specifies to the nearest whole number, so
round to the nearest tenth with all numbers until the final answer; only then
should you round to the nearest whole number. Rounding every number may
put your answer outside the acceptable range.

2. **The answer is 461.** $N = (142)(133)/41 = 460.6$, rounded to 461.

ions

a) The hawk, mouse, and plant in this particular ecosystem are related by the passage of energy. Together they comprise a food chain—the mouse is a primary consumer, and it consumes the plant, which is a primary producer (the plant is an autotroph—capable of trapping the energy of the sun and converting it into chemical energy in the form of carbohydrates). The hawk then is a predator of the mouse—and a secondary consumer. Secondary consumers eat herbivores. Energy is lost at each trophic level.

b) One example in which the biotic factors of the biosphere impact the abiotic factors is seen in the case of global warming. We rely on the greenhouse effect (in which atmospheric carbon dioxide acts as an insulator, trapping infrared radiation from the sun and re-reflecting it) to help maintain the hospitable temperature of Earth. Yet, due to the burning of fossil fuels—beginning during the Industrial Revolution—the concentration of carbon dioxide in the atmosphere has increased significantly, and this has led to an increase in global temperatures.

The thinning of the ozone layer is another way in which humans (a biotic factor of the biosphere) impact abiotic processes. Organisms are protected from ultraviolet radiation from the sun by a protective layer of ozone that surrounds Earth. Decreased ozone levels are expected to increase human skin cancer rates as well as increase DNA damage in a wide variety of organisms. The ozone layer has been degraded by humans' use of chlorofluorocarbons (CFCs), which are chemicals used in refrigeration and other industrial processes. Many countries have stopped using these chemicals, but chlorine molecules already in the atmosphere continue to have an effect on ozone.

This response clearly marks part (a) and (b) of the response, which is a good technique to use to be sure the Reader follows your answer. In part (b), the student limited himself to only two examples as directed and gave a clear explanation of each.

Energy dynamics lab

1. C
2. A
3. C

Fruit fly lab

1. C
2. D
3. B
4. A