Part C Questions

June 2016

Base your answer to question 56–57 on the information below and on your knowledge of biology. African violet plants are grown for their delicate, colorful flowers and furry, soft leaves. People often want to touch the leaves and brush the hairy leaves with their fingers. Growers and plant owners were concerned that this could negatively affect the plant. Of particular concern was the presence of body lotion or other skin products on the hands of persons touching the leaves.

A student thought this might be the basis of a science project. He selected two African violet plants. Ten leaves on each of the two plants were brushed with a gloved hand for 30 seconds, once a day, for a period of five days. The difference was that leaves of the second plant were brushed with a gloved hand that had hand lotion applied to the glove.

56–57. As part of the peer review process, evaluate the student's experiment. As part of your evaluation,

be sure to:

- state *one* possible hypothesis for the experiment proposed by the student [1]
- describe the type of data that should be collected to determine if the brushing with lotion was having a *negative* effect on the African violet plant [1]

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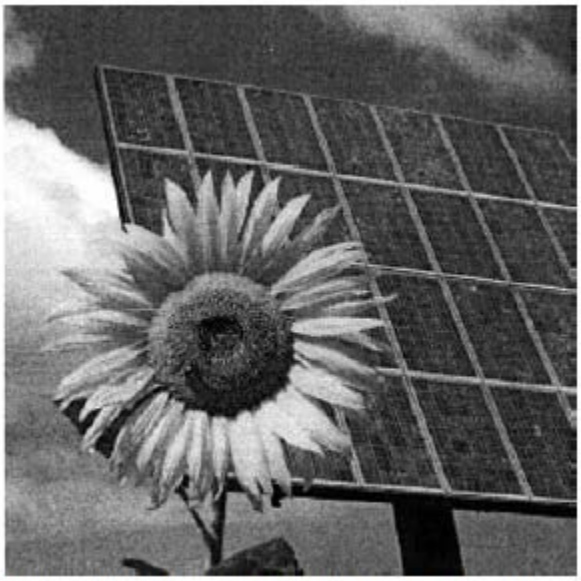
June 2015

The photograph below is part of an advertisement used by a company selling solar panels. The company claims that their panels, like plants, provide clean, renewable energy. They also claim that using solar panels will have a positive effect on the biosphere by reducing global warming.



Source:http://www.stockwatch.in/files/Energy.jpg

56–58 Explain why these claims are valid. In your answer, be sure to:

- explain why both plants and solar panels provide renewable energy, rather than nonrenewable energy [1]
- state how the widespread use of solar panels to generate electricity can help to reduce global warming [1]
- state how the energy-capturing process used by plants worldwide can help to reduce global warming [1]

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June 2014

In addition to their use for hearing, ears contain many blood vessels that allow heat to escape into the air. Animals that live in warm climates tend to have ears with large areas exposed to the environment. Animals in cold climates have a more compact ear that keeps exposure to the environment to a minimum. The photographs below show a jackrabbit from desert regions of the southwestern United States and a fennec fox from northern Africa with large ears, and a snowshoe hare and an arctic fox with small ears.


Jackrabbit


Fennec Fox


Snowshoe Hare


Arctic Fox

67–69 Discuss how differences in ear size in these organisms might have occurred. In your answer, be sure to:

- explain how the size of these animals' ears can help the animals survive in their environment [1]
- identify *one* process that most likely resulted in the animals in warm climates having large ears, while animals in cold climates have small ears [1]
- state how the overproduction of offspring in each species for many generations contributed to the presence of different ear sizes [1]

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June 2013

The year 2010 was declared the International Year of Biodiversity. However, significant loss of biodiversity is still occurring. Researchers around the world are working on a variety of ways to protect natural resources. According to an article in *Science News*, March 13, 2010, "reversing the downward spiral of biodiversity will take more than protecting wild places, but that's where scientists are starting."

57–60 Explain the importance of biodiversity to an ecosystem. In your answer, be sure to:

- state *one* effect of a loss of biodiversity in an ecosystem [1]
- identify a source of variation within a species that leads to biodiversity [1]
- identify *one* specific ecosystem that has shown a decrease in biodiversity and state *one* cause of the decrease in biodiversity in the ecosystem you identified [1]
- identify *one* human activity, other than setting up protected wildlife areas, that has helped to preserve biodiversity [1]

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Jan 2016

64–67 All organisms need to reproduce for the continuation of their species. Discuss the process of reproduction in humans. In your answer, be sure to:

- identify *one* hormone present in a female that is involved in regulating the reproductive cycle [1]
- state *one* way the nucleus of a sex cell is different from the nucleus of a body cell [1]
- state how the normal chromosome number for humans is maintained from one generation to the next [1]
- identify *one* action by the mother that can influence the development of the embryo and state a result of that influence [1]

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