

Directions: Answer the questions below based on the information in the accompanying passage.

The following passage discusses the possibility that there is life on Mars. Interest in the subject reached a peak when NASA sent two unmanned spacecraft to Mars in 1975. After 10 months, Vikings 1 and 2 entered orbits around the red planet and released landers.

When the first of the two Viking landers touched down on Martian soil on July 20, 1976, and began to send camera images back to Earth, the scientists at the Jet Propulsion Laboratory

(5) could not suppress a certain nervous anticipation, like people who hold a ticket to a lottery they have a one-in-a-million chance of winning. The first photographs that arrived, however, did not contain any evidence of life. What revealed itself to

(10) them was merely a barren landscape littered with rocks and boulders. The view resembled nothing so much as a flat section of desert—in fact, the winning entry in a contest at J.P.L. for the photograph most accurately predicting what Mars

(15) would look like was a snapshot taken in a particularly arid section of the Mojave Desert.

The scientists were soon ready to turn their attention from visible life to microorganisms. The twin Viking landers carried three experiments

(20) designed to detect current biological activity and one to detect organic compounds, because researchers thought it possible that life had developed on early Mars just as it is thought to have developed on Earth, through the gradual chemical

(25) evolution of complex organic molecules. To detect biological activity, Martian soil samples were treated with various nutrients that would produce

characteristic by-products if life forms were active in the soil. The results from all three experiments

(30) were inconclusive. The fourth experiment heated a soil sample to look for signs of organic material but found none, an unexpected result because at least organic compounds from the steady bombardment of the Martian surface by meteorites

(35) were thought to have been present.

The absence of organic materials, some scientists speculated, was the result of intense ultraviolet radiation penetrating the atmosphere of Mars and destroying organic compounds in the soil.

(40) Although Mars' atmosphere was at one time rich in carbon dioxide and thus thick enough to protect its surface from the harmful rays of the Sun, the carbon dioxide had gradually left the atmosphere and been converted into rocks. This means

(45) that even if life had gotten a start on early Mars, it could not have survived the exposure to ultraviolet radiation when the atmosphere thinned. Mars never developed a protective layer of ozone as Earth did.

(50) Despite the disappointing Viking results, there are those who still keep open the possibility of life on Mars. They point out that the Viking data cannot be considered the final word on Martian life because the two landers only sampled two limited—and uninteresting—sites. The Viking landing

(55) sites were not chosen for what they might tell of the planet's biology. They were chosen primarily because they appeared to be safe for landing a spacecraft. The landing sites were on parts of the

(60) Martian plains that appeared relatively featureless from orbital photographs.

The type of Martian terrain that these researchers suggest may be a possible hiding place for active life has an Earthly parallel: the ice-free

(65) region of southern Victoria Land, Antarctica, where the temperatures in some dry valleys average below zero. Organisms known as endoliths, a form of blue-green algae that has adapted to this harsh environment, were found living inside certain translucent, porous rocks in these Antarctic valleys. The argument based on this discovery is that if life did exist on early Mars, it is possible that it escaped worsening conditions by similarly seeking refuge in rocks. Skeptics object, however, (70) that Mars in its present state is simply too dry, even compared with Antarctic valleys, to sustain any life whatsoever.

Should Mars eventually prove to be completely barren of life, as some suspect, then this would (80) have a significant impact on the current view of the chemical origin of life. It could be much more difficult to get life started on a planet than scientists thought before the Viking landings.

1. The major purpose of the passage is to
 - (A) relate an account of an extraordinary scientific achievement
 - (B) undermine the prevailing belief that life may exist on Mars
 - (C) discuss the efforts of scientists to determine whether Martian life exists
 - (D) show the limitations of the scientific investigation of other planets
 - (E) examine the relationship between theories about Martian life and evolutionary theory

2. In line 5, the word *suppress* most nearly means
 - (A) oppose
 - (B) vanquish
 - (C) prohibit
 - (D) stifle
 - (E) disguise

3. The reference to "people who hold a ticket in a lottery" (line 6) serves to
 - (A) point out the human facet of a scientific enterprise
 - (B) indicate the expected likelihood of visible Martian life
 - (C) show that there was doubt as to whether the camera would function
 - (D) imply that any mission to another planet is a risky venture
 - (E) reveal how the success of the Viking mission depended largely on chance

4. The author uses the evidence from the four Viking experiments (lines 18–35) to establish that
 - (A) meteorites do not strike the surface of Mars as often as scientists had thought
 - (B) current theory as to how life developed on Earth is probably flawed
 - (C) there was no experimental confirmation of the theory that life exists on Mars
 - (D) biological activity has been shown to be absent from the surface of Mars
 - (E) the experiments were more fruitful than was examination of camera images

5. The third paragraph (lines 36–49) of the passage provides
 - (A) an analysis of a theory proposed earlier
 - (B) evidence supporting a statement made earlier
 - (C) a theory about findings presented earlier
 - (D) criticism of experiments discussed earlier
 - (E) a synthesis of facts reviewed earlier

6. The author suggests that an important difference between Mars and Earth is that, unlike Earth, Mars
- (A) accumulated organic compounds from the steady bombardment of meteorites
 - (B) possessed at one time an atmosphere rich in carbon dioxide
 - (C) is in the path of the harmful rays of ultraviolet radiation
 - (D) has an atmospheric layer that protects organic compounds
 - (E) could not have sustained any life that developed
7. The author mentions the Viking landing sites (lines 55–59) in order to emphasize which point?
- (A) Although evidence of life was not found by the landers, this does not mean that Mars is devoid of life.
 - (B) Although the landing sites were uninteresting, they could have harbored Martian life.
 - (C) The Viking mission was unsuccessful largely due to poor selection of the landing sites.
 - (D) The detection of life on Mars was not a primary objective of the scientists who sent the Viking landers.
 - (E) Scientists were not expecting to discover life on the Martian plains.
8. In lines 62–74, the researchers' argument that life may exist in Martian rocks rests on the idea that
- (A) organisms may adopt identical survival strategies in comparable environments
 - (B) life developed in the form of blue-green algae on Mars
 - (C) life evolved in the same way on two different planets
 - (D) endoliths are capable of living in the harsh environment of Mars
 - (E) organisms that have survived in Antarctica could survive the Martian environment