Day 14. Insertion (2)

PRACTICE 02

Passage 10

Look at the four squares [■] that indicate where the following sentence could be added to the passage. **Watt, however, was interested in developing steam engines for use in factories.** Where would the sentence best fit?	**Steam Engines** Floods in the coal mines were the most devastating hazard confronted by English miners in the eighteenth century. It was James Watt's steam engine that eventually addressed this predicament. Watt's early steam engines allowed water to be effectively pumped out of deep mines. [■A] His first steam engine was installed in 1776, and it caused a paradigm shift in the production lines of factories worldwide. [■B] First of all, the advent of factory steam engines facilitated better outcome and shorter time for production. [■C] Moreover, there was no longer a need for water power as a factory power source, so places for factory construction became less strictly restricted, allowing them to be built anywhere. [■D] Finally, because factories with steam engine power called for manual laborers in large numbers, there was mass population movement from the countryside to the ever-expanding urban centers. The influence of mass movement transformed England from a cottage industry and agrarian society into a factory-based, urban-dwelling industrial powerhouse within fifty years.

Passage 15

1. Look at the four squares [■] that indicate where the following sentence could be added to paragraph 1. **However, from our perspective on Earth, lunar and solar eclipses can be dramatic events to witness.** Where would the sentence best fit? **2.** Look at the four squares [■] that indicate where the following sentence could be added to paragraph 2. **Due to this colorful display, observing a lunar eclipse can be an unforgettable experience.** Where would the sentence best fit?	**Eclipses** [■A] Eclipses occur when a celestial object moves into the shadow of another object and becomes obscured. [■B] Solar eclipses, which take place when the moon blocks the Sun from Earth's surface, and lunar eclipses, appearing when the moon is obscured by Earth's shadow, are not the only eclipses occurring in space. [■C] Even outside of our solar system, it's possible for an eclipse to take place anytime a planet or a moon moves into the shadow of another moon or planet. [■D] Earth's umbra, or shadow, forms a lunar eclipse when Earth sits between the Sun and the Moon. This phenomenon occurs at least twice a year and lasts approximately two hours. [■A] Furthermore, when the Moon passes through Earth's umbra, it isn't in complete darkness. [■B] It still receives refracted sunlight from Earth's atmosphere, giving a yellow, red, or even blue hue depending on the amount of clouds or dust present within the atmosphere at that time. [■C] However, because lunar eclipses are

	more prevalent and perhaps less striking than solar eclipses, they are considered less noteworthy. [■D]

Passage 16

1. Look at the four squares [■] that indicate where the following sentence could be added to paragraph 1. **They can therefore experience significant atrophy and deterioration in a short amount of time.** Where would the sentence best fit? **2.** Look at the four squares [■] that indicate where the following sentence could be added to paragraph 2. **There are also circulatory system reactions that further complicate matters.** Where would the sentence best fit?	**Weightlessness and the Human Body** [■A] Millions of years of evolution have prepared the human body for living on Earth, not traveling in space. [■B] To journey into space, astronauts must be inside a spacecraft traveling with thrust powerful enough to push it out of Earth's atmosphere and into orbit. [■C] Traveling in orbit creates a largely weightless living environment for their bodies. [■D] The human body requires physical exertion, or having loads placed on its muscles and bones. However, during space travel, these loads, which are normally present in the form of gravity on Earth, do not exist. [■A] Because there is no pressure on the skeleton, bones break down and weaken. [■B] Likewise, since muscles aren't causing any kind of force, they decrease in size and strength, losing their ability to forcefully contract. [■C] Blood vessels in the lower extremities constrict, forcing more body fluids into the thoracic cavity and head; this lowers red blood cell levels. [■D] As a result, the body adapts to the higher fluid levels in the upper parts of the body by lowering the amount of circulating blood. This, along with the musculoskeletal atrophy the body is experiencing, can result in devastating problems.

TEST PRACTICE

TEST 1

1. According to paragraph 2, which of the following	**The Effects of Pesticides** Before the use of pesticides, farmers used other methods such as rotating crops, planting mixtures of crops, and using trap crops to protect their plants from pests. In the 20th century, however, advances in science led to the development of synthetic pesticides, which replaced biological agents in the form of natural enemies to manage target pest populations. While the development of these synthetic pesticides may seem to be a huge benefit for agricultural industries, there is often an ecological complication resulting from their use. Pesticides are extremely effective at killing pest populations. However, they tend to kill not only a target insect population but also its competitors and natural enemies even though this is not

is NOT true of the effects of pesticides?

A) Pesticides may kill the natural enemies of the targeted pest species.

B) Pesticides may indirectly help the pest species to grow to greater population sizes.

C) Pesticides are designed to reduce the total number of species in the area.

D) Pesticides tend to kill the competitors of the pest species.

2. Why does the author mention the European spruce sawfly in paragraph 3?

A) To demonstrate the successful use of pesticides on a pest

B) To show how one pest species will always naturally dominate another pest species

C) To demonstrate how another species replaces the targeted pest

D) To give an example of how two pest species can be controlled with one pesticide

3. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* answer choices change the meaning in important ways or leave out important information.

A) The effects of pesticides are negative with many things that can go wrong, but unfortunately there are no alternatives to the practice.

B) Pesticides have a bad reputation, but as they have no negative effects, alternatives are unnecessary.

C) Because most pesticides are harmless and have no notable side effects, alternatives have been largely ignored.

D) The use of pesticides may seem unpromising, but there are other methods of pest control that work.

4. In paragraph 5, which of the following is true of

intentional. However, as the target species dies off, its natural enemies have no source of food and begin to die off as well. This situation inevitably results in the fact that there is no enemy to suppress the target pest population. As a result, the target pest population resurges, returning in even greater numbers than before. This is possible because as the effects of the pesticide fade, any natural enemies must wait for their food supply to return. Known as target pest resurgence, the natural enemies are put at an extreme disadvantage as their populations fail to repopulate.

Another ecological reaction to pesticide use is known as secondary pest outbreak. When a key pest species is continually targeted using a pest management tactic, another species that had previously occupied the area as a minority replaces the key pest. Since there is now no enemy to keep the secondary pest population in control, the population of this species increases, becoming the new key pest. As a result, the overall pest population is not actually reduced in the area; it is simply replaced with another species of insect. In fact, the European spruce sawfly had been successfully targeted with biological controls for the twenty years following 1940 in New Brunswick, Canada. However, from 1960 to 1962, an effective synthetic pesticide was used against another arthropod in the area, the spruce budworm. Indeed, the populations of both insects declined drastically. Then, in 1964, there was an outbreak of the spruce sawfly that overwhelmed the entire insect population of the area. This indicates yet another side effect of pesticide use, which is related to genetic resistance.

Natural selection is a process that ensures the survival of all species, and it induces the development of pesticide resistance in targeted insect species. [■A] When pesticides are used, even if they are effective, there are a few individuals that are resistant to their effects, transmitting the resistance to subsequent and even more robust generations. [■B] Therefore, in this case, the only 'progress' made with the continual use of pesticides is in creating a species of insect immune to the effects of pesticides. [■C] In addition, it doesn't take much time for a resistant species to come about. [■D] In 1946, after only 7 years of the widespread use of DDT, an effective synthetic insecticide, pesticide resistance was observed in houseflies. By 1990, astonishingly, over 500 species of arthropods were found to be resistant to pesticides. Of course, growers tried to solve this by using higher amounts or other forms of pesticide. Even with these measures, however,

biological control agents? A) They destroy pests by competing with them for food. B) The negative effects of pesticides may be avoided by using them. C) They are generally effective at reducing pests until they become a new pest species themselves. D) They operate independently of humans but need to be used jointly with pesticides to keep competitors in check. **5.** Look at the four squares [■] that indicate where the following sentence could be added to paragraph 4. **This causes a large increase in numbers of pests that are immune to the pesticide.** Where would the sentence best fit?	those insects that were resistant to one pesticide were also resistant to others. The dilemmas associated with pesticide use has been coined the "pesticide treadmill." Although it might seem like a losing battle with so many things that can go wrong from pesticide use, there are some alternatives for reducing pest damage to crops. Biological control agents in the form of predators and natural enemies are effective at regulating pests without any efforts from humans. Beyond question, these agents are important for keeping plant-feeding insects from becoming economic nuisances. If pesticides are to be used, selectivity, the use of pesticides without affecting natural enemies, needs to be achieved.

Paragraph Summary

- ✓ Paragraph 1 **Benefits BUT Disadvantage**
- ✓ Paragraph 2 **Dis 1 - Death of N.E – Target Pest Resurgence**
- ✓ Paragraph 3 **Dis 2 - Secondary Pest Outbreak**
- ✓ Paragraph 4 **Dis 3 – Resistance to Pesticides**
- ✓ Paragraph 5 **Alternatives**

6. **Directions:** An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. ***This question is worth 2 points.***

While pesticides may seem helpful initially, their use can cause many problems.

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-
-

Answer Choices

A) The use of a pesticide on the Spruce budworm caused the population of the European Spruce sawfly to thrive.

B) Natural selection can lead to a species' resistance to pesticides, making their use ineffective over time.

C) Natural selection in a pest species can be seen in the case of DDT, where after seven years resistance was seen in houseflies.

D) Pesticides may be counter-productive as they can lead to other species becoming new pests.

E) Decreased predation resulting from the indirect killing of a pest species' enemies can result in even greater numbers of the pest.

F) As biological controls are generally illegal, chemical pesticides will continue to be used for many years.

Answers

[Practice 02]

Passage 10 A)

증기기관	Steam Engines
석탄 광산 안의 홍수는 18 세기 영국 광부들이 직면한 가장 파괴적인 위험요소였다. 이 곤경을 마침내 해결한 것은 James Watt 의 증기기관이었다. Watt 의 초기 증기기관은 깊은 광산에서 물을 효과적으로 끌어올리게 하였다. **[■A] 그러나 Watt 는 공장에서 사용할 수 있는 증기기관을 개발하는 데 관심이 있었다.** 그의 첫 번째 증기기관은 1997 년에 설치되었으며, 그것은 전 세계적으로 공장 생산라인의 패러다임에 변화를 가져왔다. **[■B]** 우선, 공장 시스템 기관의 출현은 생산에 있어 더 유리한 생산량과 시간 단축을 가능케 하였다. **[■C]** 게다가 공장의 전력 공급원으로서 수력을 필요로 하지 않았기 때문에 공장 건설을 위한 부지가 덜 제한받게 되었고, 이는 공장이 어디에나 지어질 수 있도록 하였다. **[■D]** 마지막으로 증기기관을 가진 공장은 많은 수작업 노동자를 필요로 했으므로, 시골에서 확장되고 있는 도심에 이르기까지 대규모 인구 이동이 있었다. 이 대규모 이동의 영향은 50 년 안에 영국을 가내공업과 농업 사회에서 공장을 기반으로 한 도시 거주 산업 대국으로 바꾸었다.	Floods in the coal mines were the most devastating hazard confronted by English miners in the eighteenth century. It was James Watt's steam engine that eventually addressed this predicament. Watt's early steam engines allowed water to be effectively pumped out of deep mines. **[■A] Watt, however, was interested in developing steam engines for use in factories.** His first steam engine was installed in 1776, and it caused a paradigm shift in the production lines of factories worldwide. **[■B]** First of all, the advent of factory steam engines facilitated better outcome and shorter time for production. **[■C]** Moreover, there was no longer a need for water power as a factory power source, so places for factory construction became less strictly restricted, allowing them to be built anywhere. **[■D]** Finally, because factories with steam engine power called for manual laborers in large numbers, there was mass population movement from the countryside to the ever-expanding urban centers. The influence of mass movement transformed England from a cottage industry and agrarian society into a factory-based, urban-dwelling industrial powerhouse within fifty years.
지문에 다음 문장이 들어갈 수 있는 곳을 나타내는 네 개의 **[■]** 를 보시오. **그러나 Watt 는 공장에서 사용할 수 있는 증기기관을 개발하는 데 관심이 있었다.** 주어진 문장이 들어가기에 가장 알맞은 곳은?	Look at the four squares **[■]** that indicate where the following sentence could be added to the passage. **Watt, however, was interested in developing steam engines for use in factories.** Where would the sentence best fit?

어휘

devastating [dévəstèitiŋ] 대단히 파괴적인, 굉장한 | **hazard** [hǽzərd] 위험 | **confront** [kənfrʌ́nt] 맞서다, 정면으로 부딪히다
address [ədrés, ǽdres] 다루다 | **effectively** [iféktivli] 효과적으로 | **predicament** [prɪ|dɪkəmənt] 곤경, 궁지, 어려움
paradigm [pǽrədaɪm] 전형적인 예 (양식) | **manual** [|mǽnjuəl] 손으로 하는, 육체 노동의
cottage industry [|kɑːtɪdʒ ɪndəstri] 가내 공업 | **agrarian** [ə|greriən] 농업의 | **powerhouse** [|paʊərhaʊs] 유력 집단

Passage 15 1. D) 2. C)

식(蝕)	Eclipses
[■A] 식(蝕) 현상은 천체상의 한 물체가 다른 물체의 그림자 속으로 이동하여 잠식당할 때 일어난다. **[■B]** 달이 지표면에 비치는 태양광선을 막을 때 일어나는 일식과, 달이 지구 그림자에 가려졌을 때 나타나는 월식이 우주에서 일어나는 유일한 식 현상인 것은 아니다. **[■C]** 태양계 밖에서도 한 행성이나 위성이 다른 위성이나 행성의 그림자 속으로 이동하게 되면 언제든지 식 현상이 발생할 수 있다. **[■D] 그러나, 지구에서 우리의 관점으로는, 월**	**[■A]** Eclipses occur when a celestial object moves into the shadow of another object and becomes obscured. **[■B]** Solar eclipses, which take place when the moon blocks the Sun from Earth's surface, and lunar eclipses, appearing when the moon is obscured by Earth's shadow, are not the only eclipses occurring in space. **[■C]** Even outside of our solar system, it's possible for an eclipse to take place anytime a planet or a moon moves into the shadow of another moon or planet. **[■D] However, from**

식과 일식 모두 목격하기에 극적인 사건이 될 수 있다.

지구의 본영(本影), 또는 그림자는 지구가 태양과 달 사이에 위치할 때 월식을 일으킨다. 이 현상은 적어도 일 년에 두 번 발생하며 약 두 시간 가량 지속된다. **[■A]** 더욱이 달이 지구의 본영을 지나갈 때 완전히 어두워지는 것은 아니다. **[■B]** 이것은 여전히 지구의 표면으로부터 굴절된 태양 광선을 받아 당시에 대기 중에 존재하는 구름이나 먼지의 양에 따라 달에 황색, 적색, 심지어 청색 색조를 주게 된다. **[■C] 이렇게 다채로운 색 때문에, 월식을 보는 것이 잊지 못한 경험이 될 수 있다.** 그러나 월식이 좀 더 일반적으로 일어나는 데다가 일식에 비해 덜 두드러지기 때문에 월식은 덜 주목할 만하다고 여겨진다. **[■D]**

1. 단락 1 에서 다음 문장이 들어갈 수 있는 곳을 나타내는 네 개의 [■] 를 보시오.

그러나, 지구에서 우리의 관점으로는, 월식과 일식 모두 목격하기에 극적인 사건이 될 수 있다.

주어진 문장이 들어가기에 가장 알맞은 곳은?

2. 단락 2 에서 다음 문장이 들어갈 수 있는 곳을 나타내는 네 개의 [■]를 보시오.

이렇게 다채로운 색 때문에, 월식을 보는 것이 잊지 못한 경험이 될 수 있다.

주어진 문장이 들어가기에 가장 알맞은 곳은?

our perspective on Earth, lunar and solar eclipses can be dramatic events to witness

Earth's umbra, or shadow, forms a lunar eclipse when Earth sits between the Sun and the Moon. This phenomenon occurs at least twice a year and lasts approximately two hours. **[■A]** Furthermore, when the Moon passes through Earth's umbra, it isn't in complete darkness. **[■B]** It still receives refracted sunlight from Earth's atmosphere, giving a yellow, red, or even blue hue depending on the amount of clouds or dust present within the atmosphere at that time. **[■C] Due to this colorful display, observing a lunar eclipse can be an unforgettable experience.** However, because lunar eclipses are more prevalent and perhaps less striking than solar eclipses, they are considered less noteworthy. **[■D]**

1. Look at the four squares **[■]** that indicate where the following sentence could be added to paragraph 1.

However, from our perspective on Earth, lunar and solar eclipses can be dramatic events to witness.

Where would the sentence best fit?

2. Look at the four squares [■] that indicate where the following sentence could be added to paragraph 2.

Due to this colorful display, observing a lunar eclipse can be an unforgettable experience.

Where would the sentence best fit?

어휘

eclipse [ɪ|klɪps] 식 | **celestial** [sə|lestʃl] 천체의, 하늘의 | **solar eclipse** 일식 | **obscure** [əb|skjʊr] 분명하지 않은, 알기 어려운 **block** [blɑːk] 가로막다 | **lunar eclipse** 월식 | **solar system** 태양계 | **umbra** [|ʌmbrə] 본영 (태양 빛이 차단되어 지구나 달에 생기는 그림자) | **approximately** [ə|prɑːksɪmətli] 대략 | **hue** [hjuː] 색조 | **refract** [rɪ|frækt] 굴절시키다 **prevalent** [|prevələnt] 널리 퍼진

Passage 16 1. D) 2. C)

무중력 상태와 인체

[■A] 수백만 년의 진화는 인체가 지구상에서 살 수 있는 조건을 갖추게 했지만 우주 여행에 대비하도록 하지는 않았다. **[■B]** 우주 여행을 하기 위해서 우주 비행사들은 기체(우주선)를 지구 대기 바깥으로 밀어내어 궤도상으로 진입시킬 수 있을 만큼 강한 추진력을 통해 움직이는 우주선 내에 탑승해야 한다. **[■C]** 궤도를 여행하는 것은 이들의 신체에 있어 전적으로 무중력 상태의 생활 환경을 만들어낸다. **[■D] 그러므로 그들은 짧은 시간에 내에 상당한 위축과 악화를 경험할 수 있다.**

인간의 몸은 신체적 활동, 또는 근육이나 뼈에 가해지는 하중(荷重)을 필요로 한다. 그러나 우주 여행 중에는 보통 지구에서 중력의 형태로 존재하는 이 하중이 존재하지 않는다. **[■A]** 그리고 뼈에 가해지는 압력이 없기 때문에 뼈는 파손되고 약해진다. **[■B]** 마찬가지로 근육 역시 아무런 힘을 일으키지

Weightlessness and the Human Body

[■A] Millions of years of evolution have prepared the human body for living on Earth, not traveling in space. **[■B]** To journey into space, astronauts must be inside a spacecraft traveling with thrust powerful enough to push it out of Earth's atmosphere and into orbit. **[■C]** Traveling in orbit creates a largely weightless living environment for their bodies. **[■D] They can therefore experience significant atrophy and deterioration in a short amount of time.**

The human body requires physical exertion, or having loads placed on its muscles and bones. However, during space travel, these loads, which are normally present in the form of gravity on Earth, do not exist. **[■A]** Because there is no pressure on the skeleton, bones break down and weaken. **[■B]** Likewise, since muscles aren't causing

않기 때문에 부피와 강도가 줄어들고 힘있게 수축하는 능력이 떨어진다. **[■C] 또한 순환계 반응이 사태를 더욱 복잡하게 만든다.** 말단 혈관은 수축하여 더 많은 체액을 흉강과 머리로 밀어내 보내고 이는 혈액 중의 적혈구 수치를 낮춘다. **[■D]** 그 결과 신체는 상체의 높아진 체액 농도에 적응하기 위해 혈액의 순환량을 줄인다. 이것은 신체가 겪는 근육과 골격의 퇴화와 더불어 치명적인 문제를 일으킬 수 있다. **1.** 지문에 다음 문장이 들어갈 수 있는 곳을 나타내는 네 개의 **[■]**를 보시오. **그러므로 그들은 짧은 시간에 내에 상당한 위축과 악화를 경험할 수 있다.** 주어진 문장이 들어가기에 가장 알맞은 곳은? **2.** 지문에 다음 문장이 들어갈 수 있는 곳을 나타내는 네 개의 [■]를 보시오. **또한 순환계 반응이 사태를 더욱 복잡하게 만든다.** 주어진 문장이 들어가기에 가장 알맞은 곳은?	any kind of force, they decrease in size and strength, losing their ability to forcefully contract. **[■C] There are also circulatory system reactions that further complicate matters.** Blood vessels in the lower extremities constrict, forcing more body fluids into the thoracic cavity and head; this lowers red blood cell levels. **[■D]** As a result, the body adapts to the higher fluid levels in the upper parts of the body by lowering the amount of circulating blood. This, along with the musculoskeletal atrophy the body is experiencing, can result in devastating problems. **1.** Look at the four squares **[■]** that indicate where the following sentence could be added to paragraph 1. **They can therefore experience significant atrophy and deterioration in a short amount of time.** Where would the sentence best fit? **2.** Look at the four squares [■] that indicate where the following sentence could be added to paragraph 2. **There are also circulatory system reactions that further complicate matters.** Where would the sentence best fit?

어휘

evolution [ˌiːvəˈluːʃn] 진화 | **prepare** [prɪˈper] 준비하다 | **astronaut** [ˈæstrənɔːt] 우주 비행사 | **spacecraft** [ˈspeɪskræft] 우주선 **thrust** [θrʌst] 추진력 | **orbit** [ˈɔːrbɪt] 궤도 | **musculoskeletal** [mʌ́skjuləskélətl] 근골격의 |**exertion** [ɪgˈzɜːrʃn] 발휘, 분발 **skeleton** [ˈskelɪtn] 골격 |**extremity** [ɪkˈstreməti] 말단 | **constrict** [kənˈstrɪkt] 수축하다 | **thoracic cavity** 흉강 | **atrophy** [ˈætrəfi] 퇴화 **devastating** [ˈdevəsteɪtɪŋ] 치명적인

Test 1 **1.** C **2.** C **3.** D **4. B** **5.** B **6.** B, D, E

살충제의 효과	The Effects of Pesticides
살충제를 사용하기 전에 농부들은 윤작, 혼작, 포획작물의 이용 등 다양한 방법들을 통해 해충으로부터 작물을 보호했다. 그러나 20세기 과학의 발전은 합성 살충제의 발달로 이어졌고, 이것은 천적 형태의 생물학적 방법을 대신하며 표적해충 개체 수를 관리하는 수단으로 이용되었다. 이러한 합성 살충제의 발달은 농업에 커다란 도움을 주는 것처럼 보일 수도 있지만 그것의 이용으로 인해 종종 생태학적 문제점이 발생하기도 한다.	Before the use of pesticides, farmers used other methods such as rotating crops, planting mixtures of crops, and using trap crops to protect their plants from pests. In the 20th century, however, advances in science led to the development of synthetic pesticides, which replaced biological agents in the form of natural enemies to manage target pest populations. While the development of these synthetic pesticides may seem to be a huge benefit for agricultural industries, there is often an ecological complication resulting from their use.
살충제는 해충을 죽이는 데 대단히 효과적이다. 그러나 그것은 의도적은 아니지만 표적해충뿐만 아니라 그 경쟁 상대와 천적까지 죽여 버리곤 한다. 하지만 목표종들이 죽고 나면, 천적들은 먹잇감이 없어 함께 죽기 시작한다. 이런 상황에서는 필연적으로 표적해충을 잡아 먹는 적이 없어지게 된다. 그 결과 표적해충 개체수가 다시 증가하여 그 숫자가 예전보다 더 커진다. 천적들은 살충제의 약효가 사라지고 먹이사슬이 회복될 때까지 기다려야 하기 때문이다. 표적해충 부활(target pest resurgence)이라고 알려져 있는 이 현상으로 천적들은 개체의 재증식 속도가 더디어지기 때문에 극도로 불리한 상황에 처하게 된다.	Pesticides are extremely effective at killing pest populations. However, they tend to kill not only a target insect population but also its competitors and natural enemies even though this is not intentional. However, as the target species dies off, its natural enemies have no source of food and begin to die off as well. This situation inevitably results in the fact that there is no enemy to suppress the target pest population. As a result, the target pest population resurges, returning in even greater numbers than before. This is possible because as the effects of the pesticide fade, any natural enemies must wait for their food supply to return. Known as target pest

	resurgence, the natural enemies are put at an extreme disadvantage as their populations fail to repopulate.
2차 해충 발생은 살충제 이용의 또 다른 생태학적 반응으로 알려져 있다. 해충 관리 전술을 이용해 주요 해충을 지속적으로 공격하면 전에 그 지역에서 두 번째로 많았던 또 다른 해충이 주요 해충을 대체한다. 이제는 이 2차 해충 개체를 통제할 만한 천적이 없기 때문에 이 종의 수가 증가하고, 그것이 새로운 주요 해충이 된다. 그 결과, 해당 지역의 전체적인 해충 개체수는 실제로는 줄어드는 게 아니라 다른 종으로 대체될 뿐이다. 일례로 캐나다 뉴브런스위크에서는 1940년 이후 20년 동안 생물학적 제어 방법으로 잎벌레를 성공적으로 관리해 왔다. 그러나 1960년에서 1962년 사이, 그 지역에 살던 또 다른 절지동물인 가문비나무눈벌레에 대해 효과적인 합성 살충제가 사용되면서 두 곤충의 개체수는 극적으로 감소했다. 그러다가 1964년에 잎벌레수가 급증해 그 지역의 전체 곤충 개체수를 압도하게 되었다. 이 사건은 살충제 이용의 또 다른 부작용을 보여주며 이는 유전자 내성과 관련이 있다.	Another ecological reaction to pesticide use is known as secondary pest outbreak. When a key pest species is continually targeted using a pest management tactic, another species that had previously occupied the area as a minority replaces the key pest. Since there is now no enemy to keep the secondary pest population in control, the population of this species increases, becoming the new key pest. As a result, the overall pest population is not actually reduced in the area; it is simply replaced with another species of insect. In fact, the European spruce sawfly had been successfully targeted with biological controls for the twenty years following 1940 in New Brunswick, Canada. However, from 1960 to 1962, an effective synthetic pesticide was used against another arthropod in the area, the spruce budworm. Indeed, the populations of both insects declined drastically. Then, in 1964, there was an outbreak of the spruce sawfly that overwhelmed the entire insect population of the area. This indicates yet another side effect of pesticide use, which is related to genetic resistance.
자연선택은 모든 생물의 생존을 보장하는 과정이며 표적곤충의 살충제 내성 증가로 이어진다. **[■A]** 살충제를 사용하면 효과가 나타난다 하더라도 그 약효에 대해 내성을 보이는 몇몇 개체가 있고 그 내성이 이후의 보다 튼튼한 세대로 전달된다는 것이다. **[■B] 이것이 살충제에 면역이 생긴 해충의 수를 대량으로 증가시킨다.** 따라서 이 경우 지속적인 살충제 이용으로 얻을 수 있는 유일한 '결과'는 살충제의 약효에 면역력을 지닌 곤충을 만들어 내는 것뿐이다. **[■C]** 게다가 내성이 있는 종이 나타나기까지는 오랜 시간이 걸리지도 않는다. **[■D]** 효과적인 합성 살충제 DDT를 널리 사용하기 시작한 지 불과 7년 뒤인 1946년, 집파리에게서 살충제 내성이 관찰되었다. 1990년까지 놀랍게도 500종 이상의 절지동물들이 살충제에 내성을 보이는 것으로 파악되었다. 물론 농부들은 살충제의 양을 늘리거나 다른 형태의 살충제를 사용함으로써 이 문제를 해결하려 들었다. 그러나 이런 방법을 써도 한 살충제에 대해 내성이 생긴 곤충들은 다른 살충제에 대해서도 내성을 보였다.	Natural selection is a process that ensures the survival of all species, and it induces the development of pesticide resistance in targeted insect species. **[■A]** When pesticides are used, even if they are effective, there are a few individuals that are resistant to their effects, transmitting the resistance to subsequent and even more robust generations. **[■B] This causes a large increase in numbers of pests that are immune to the pesticide.** Therefore, in this case, the only 'progress' made with the continual use of pesticides is in creating a species of insect immune to the effects of pesticides. **[■C]** In addition, it doesn't take much time for a resistant species to come about. **[■D]** In 1946, after only 7 years of the widespread use of DDT, an effective synthetic insecticide, pesticide resistance was observed in houseflies. By 1990, astonishingly, over 500 species of arthropods were found to be resistant to pesticides. Of course, growers tried to solve this by using higher amounts or other forms of pesticide. Even with these measures, however, those insects that were resistant to one pesticide were also resistant to others.
살충제 이용과 관련된 딜레마를 일컬어 "살충제 쳇바퀴"라는 용어가 생겨났다. 살충제 사용 때문에 발생할 수 있는 상황이 너무나 많아 승산 없는 싸움처럼 느껴질 수도 있지만 작물의 해충 피해를 줄이기 위한 대안들이 몇 가지 존재한다. 포식자와 천적 형태의 생물 방제 수단은 사람의 노력 없이 해충을 통제하는 데 효과적이다. 말할 것도 없이 이런 수단은 식물을 먹고 사는 곤충들로 인한 경제적인 피해를 방지하는 데 중요한 역할을 한다. 살충제를 사용할 때는 천적에 영향을 주지 않도록 선별성을 유지해야	The dilemmas associated with pesticide use has been coined the "pesticide treadmill." Although it might seem like a losing battle with so many things that can go wrong from pesticide use, there are some alternatives for reducing pest damage to crops. Biological control agents in the form of predators and natural enemies are effective at regulating pests without any effort from humans. Beyond question, these agents are important for keeping plant-feeding insects from becoming economic nuisances. If pesticides are to be used, selectivity, the use of

한다.

1. 단락 2에 따르면, 다음 중 살충제의 효과에 대한 내용으로 사실이 아닌 것은?

A) 살충제는 목표 종의 천적도 죽일 수 있다.

B) 살충제는 간접적으로 해충이 더 많이 번식하게 도와줄 수 있다.

C) 살충제는 지역의 전체 개체수를 줄이기 위해 만들어졌다.

D) 살충제는 해충의 경쟁자들도 죽이는 경향이 있다.

2. 단락 3에서 글쓴이는 왜 유럽 잎벌레를 언급하는가?

A) 해충에 대한 성공적인 살충제의 사용을 설명하기 위해

B) 어떻게 하나의 해충이 자연적으로 항상 다른 해충에 우세하다는 것을 보여주기 위해

C) 어떻게 다른 종이 목표종을 대신하는지 설명하기 위해

D) 어떻게 두 개의 다른 해충이 하나의 살충제로 통제되는지에 대한 예를 들기 위해

3. 다음 문장 중 지문의 음영 표시된 문장의 핵심 정보를 가장 잘 표현한 것은? *오답은* 문장의 의미가 크게 왜곡되거나 핵심 정보가 누락되어 있다.

A) 살충제의 효과는 잘못될 수 있는 많은 것들에서 부정적이지만, 불행하게도 다른 대안이 없다.

B) 살충제는 나쁜 평판을 가지고 있지만, 부정적인 영향이 없으므로, 대안은 불필요하다.

C) 거의 모든 살충제는 무해하고 눈에 띄는 부작용이 없기 때문에, 대안은 대체로 무시되었다.

D) 살충제의 사용은 가망 없어 보일지 모르지만, 해충 통제에 효과가 있는 다른 방법들이 있다.

4. 단락 5에서, 다음 중 생물학적 제어 방법에 대한 내용으로 사실인 것은?

A) 그것들은 식량을 놓고 경쟁함으로써 해충들을 박멸한다

B) 살충제의 부정적 효과는 그것들을 사용함으로써 피할 수 있다.

C) 그것들은 그들 자신이 새로운 해충이 되기 전까지는 일반적으로 해충을 감소시키는 데 효과적이다.

D) 그것들은 인간과는 별개로 작용하지만 경쟁자들을 억누르기 위해서는 살충제와 함께 사용되어야 한다.

pesticides without affecting natural enemies, needs to be achieved.

1. According to paragraph 2, which of the following is NOT true of the effects of pesticides?

A) Pesticides may kill the natural enemies of the targeted pest species.

B) Pesticides may indirectly help the pest species to grow to greater population sizes.

C) Pesticides are designed to reduce the total number of species in the area.

D) Pesticides tend to kill the competitors of the pest species.

2. Why does the author mention the European spruce sawfly in paragraph 3?

A) To demonstrate the successful use of pesticides on a pest

B) To show how one pest species will always naturally dominate another pest species

C) To demonstrate how another species replaces the targeted pest

D) To give an example of how two pest species can be controlled with one pesticide

3. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* answer choices change the meaning in important ways or leave out important information.

A) The effects of pesticides are negative with many things that can go wrong, but unfortunately there are no alternatives to the practice.

B) Pesticides have a bad reputation, but as they have no negative effects, alternatives are unnecessary.

C) Because most pesticides are harmless and have no notable side effects, alternatives have been largely ignored.

D) The use of pesticides may seem unpromising, but there are other methods of pest control that work.

4. In paragraph 5, which of the following is true of biological control agents?

A) They destroy pests by competing with them for food.

B) The negative effects of pesticides may be avoided by using them.

C) They are generally effective at reducing pests until they become a new pest species themselves.

D) They operate independently of humans but need to be used jointly with pesticides to keep competitors in check.

5. 단락 4에 다음 문장이 들어갈 수 있는 곳을 나타내는 네 개의 [■]를 보시오.

이것이 살충제에 면역이 생긴 해충의 수를 대량으로 증가시킨다.

주어진 문장이 들어가기에 가장 알맞은 곳은?

6. 지문을 간략하게 요약한 글의 첫 문장이 아래에 제시되어 있다. 지문의 가장 중요한 내용을 표현하는 세 개의 선택지를 골라 요약문을 완성하시오. 일부 문장들은 지문에 제시되지 않았거나 지문의 지엽적인 내용을 표현하기 때문에 요약문에 포함되지 않는다. *이 문제의 배점은 2점이다.*

살충제가 처음에는 도움이 되는 것처럼 보일지 모르지만, 그것을 사용하는 것은 많은 문제를 야기한다.

- **B) 자연선택은 살충제에 대한 종의 내성을 키울 수 있는데, 이는 시간이 흐름에 따라 살충제의 효력을 약하게 한다.**
- **D) 살충제는 다른 종이 새로운 해충이 되게 이끌 수 있는데, 이는 역효과를 낳을 수도 있다.**
- **E) 포식의 감소는 해충의 천적을 간접적으로 죽임으로 인해 오히려 더 많은 수의 해충이라는 결과를 가져올 수 있다.**

A) 가문비나무눈벌레에 대한 살충제의 사용은 유럽 잎벌레의 개체수 번성을 야기했다.

C) 해충의 경우에서 자연선택은 DDT의 경우에서 볼 수 있는데, 7년 후에 집파리가 내성을 가진 것에서 볼 수 있다.

F) 생물학적 제어는 일반적으로 불법이기 때문에 화학 살충제가 앞으로 계속해서 사용될 것이다.

5. Look at the four squares [■] that indicate where the following sentence could be added to paragraph 4.

This causes a large increase in numbers of pests that are immune to the pesticide.

Where would the sentence best fit?

6. **Directions:** An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. ***This question is worth 2 points.***

While pesticides may seem helpful initially, their use can cause many problems.

- **B) Natural selection can lead to a species' resistance to pesticides, making their use ineffective over time.**
- **D) Pesticides may be counter-productive as they can lead to other species becoming new pests.**
- **E) Decreased predation resulting from the indirect killing of a pest species' enemies can result in even greater numbers of the pest.**

A) The use of a pesticide on the Spruce budworm caused the population of the European Spruce sawfly to thrive.

C) Natural selection in a pest species can be seen in the case of DDT, where after seven years resistance was seen in houseflies.

F) As biological controls are generally illegal, chemical pesticides will continue to be used for many years.

어휘

pesticide [ˈpestɪsaɪd] 살충제 | **rotating crop** [roh-teytiŋ krɑːp] 윤작 | **trap crop** [trǽp krɑːp] 포획작물 | **pest** [pest] 해충
synthetic [sɪnˈθetɪk] 합성의 | **natural enemy** [nǽtʃrəl enəmi] 천적 | **agricultural** [ǽgrikʌ́ltʃərəl] 농업의
ecological [ˌiːkəˈlɑːdʒɪkl] 생태계의 | **complication** [ˌkɑːmplɪˈkeɪʃn] 복합성 | **extremely** [ɪkˈstriːmli] 극도로
competitor [kəmˈpetɪtə(r)] 경쟁자 | **intentional** [ɪnˈtenʃənl] 의도적인 | **inevitably** [ɪnˈevɪtəbli] 필연적으로
suppress [səˈpres] 진압하다 | **resurge** [risə́ːrdʒ] 부활, 재기 | **fade** [feɪd] 사라지다 | **repopulate** [riːpɑ́pjulèit] 재증식하다
outbreak [ˈaʊtbreɪk] 발생 | **tactic** [ˈtæktɪk] 전략, 전술 | **reduce** [rɪˈduːs] 감소하다 | **sawfly** [-flài] 잎벌레
arthropod [ˈɑːrθrəpɑːd] 절지동물 | **budworm** [bʌ́dwə́ːrm] 가문비나무벌레 | **decline** [dɪˈklaɪn] 감소하다
drastically [drǽstikəli] 급격히 | **overwhelm** [ˌoʊvərˈwelm] 제압하다 | **resistance** [rɪˈzɪstəns] 내성 | **transmit** [trænsˈmɪt] 전달하다
robust [roʊˈbʌst] 튼튼한 | **coin** [kɔɪn] 만들다 | **pesticide** [ˈpestɪsaɪd] 살충제 | **treadmill** [ˈtredmɪl] 쳇바퀴
alternative [ɔːlˈtɜːrnətɪv] 대안 | **regulate** [ˈregjuleɪt] 조절하다 | **nuisance** [ˈnuːsns] 폐, 불편 | **selectivity** [silèktívəti] 선별성