

# READING

This section measures your ability to understand academic passages in English.

There are three passages in the section. Give yourself 20 minutes to read each passage and answer the questions about it. The entire section will take 60 minutes to complete.

You may look back at a passage when answering the questions. You can skip questions and go back to them later as long as there is time remaining.

**Directions:** Read the passage. Then answer the questions. Give yourself 20 minutes to complete this practice set.

## MINERALS AND PLANTS

Research has shown that certain minerals are required by plants for normal growth and development. The soil is the source of these minerals, which are absorbed by the plant with the water from the soil. Even nitrogen, which is a gas in its elemental state, is normally absorbed from the soil as nitrate ions. Some soils are notoriously deficient in micro nutrients and are therefore unable to support most plant life. So-called serpentine soils, for example, are deficient in calcium, and only plants able to tolerate low levels of this mineral can survive. In modern agriculture, mineral depletion of soils is a major concern, since harvesting crops interrupts the recycling of nutrients back to the soil.

Mineral deficiencies can often be detected by specific symptoms such as chlorosis (loss of chlorophyll resulting in yellow or white leaf tissue), necrosis (isolated dead patches), anthocyanin formation (development of deep red pigmentation of leaves or stem), stunted growth, and development of woody tissue in an herbaceous plant. Soils are most commonly deficient in nitrogen and phosphorus. Nitrogen-deficient plants exhibit many of the symptoms just described. Leaves develop chlorosis; stems are short and slender; and anthocyanin discoloration occurs on stems, petioles, and lower leaf surfaces. Phosphorus-deficient plants are often stunted, with leaves turning a characteristic dark green, often with the accumulation of anthocyanin. Typically, older leaves are affected first as the phosphorus is mobilized to young growing tissue. Iron deficiency is characterized by chlorosis between veins in young leaves.

Much of the research on nutrient deficiencies is based on growing plants hydroponically, that is, in soilless liquid nutrient solutions. This technique allows researchers to create solutions that selectively omit certain nutrients and then observe the resulting effects on the plants. Hydroponics has applications beyond basic research, since it facilitates the growing of greenhouse vegetables during winter. Aeroponics, a technique in which plants are suspended and the roots misted with a nutrient solution, is another method for growing plants without soil.

While mineral deficiencies can limit the growth of plants, an overabundance of certain minerals can be toxic and can also limit growth. Saline soils, which have high concentrations of sodium chloride and other salts, limit plant growth, and research continues to focus on developing salt-tolerant varieties of agricultural crops. Research has focused on the toxic effects of heavy metals such as lead, cadmium, mercury, and aluminum; however, even copper and zinc, which are essential elements, can become toxic in high concentrations. Although most plants cannot survive in these soils, certain plants have the ability to tolerate high levels of these minerals.

Scientists have known for some time that certain plants, called hyperaccumulators, can concentrate minerals at levels a hundredfold or greater than normal. A survey of known hyperaccumulators identified that 75 percent of them amassed nickel; cobalt, copper, zinc, manganese, lead, and cadmium are other minerals of choice. Hyperaccumulators run the entire range of the plant world. They may be

herbs, shrubs, or trees. Many members of the mustard family, spurge family, legume family, and grass family are top hyperaccumulators. Many are found in tropical and subtropical areas of the world, where accumulation of high concentrations of metals may afford some protection against plant-eating insects and microbial pathogens.

Only recently have investigators considered using these plants to clean up soil and waste sites that have been contaminated by toxic levels of heavy metals—an environmentally friendly approach known as phytoremediation. This scenario begins with the planting of hyperaccumulating species in the target area, such as an abandoned mine or an irrigation pond contaminated by runoff. Toxic minerals would first be absorbed by roots but later relocated to the stem and leaves. A harvest of the shoots would remove the toxic compounds off site to be burned or composted to recover the metal for industrial uses. After several years of cultivation and harvest, the site would be restored at a cost much lower than the price of excavation and reburial, the standard practice for remediation of contaminated soils. For example, in field trials, the plant alpine pennycress removed zinc and cadmium from soils near a zinc smelter, and Indian mustard, native to Pakistan and India, has been effective in reducing levels of selenium salts by 50 percent in contaminated soils.

**Directions:** Now answer the questions.

P  
A  
R  
A  
G  
R  
A  
P  
H  
1

Research has shown that certain minerals are required by plants for normal growth and development. The soil is the source of these minerals, which are absorbed by the plant with the water from the soil. Even nitrogen, which is a gas in its elemental state, is normally absorbed from the soil as nitrate ions. Some soils are notoriously deficient in micro nutrients and are therefore unable to support most plant life. So-called serpentine soils, for example, are deficient in calcium, and only plants able to tolerate low levels of this mineral can survive. In modern agriculture, mineral depletion of soils is a major concern, since harvesting crops interrupts the recycling of nutrients back to the soil.

1. According to paragraph 1, what is true of plants that can grow in serpentine soils?
  - (A) They absorb micronutrients unusually well.
  - (B) They require far less calcium than most plants do.
  - (C) They are able to absorb nitrogen in its elemental state.
  - (D) They are typically crops raised for food.

Mineral deficiencies can often be detected by specific symptoms such as chlorosis (loss of chlorophyll resulting in yellow or white leaf tissue), necrosis (isolated dead patches), anthocyanin formation (development of deep red pigmentation of leaves or stem), stunted growth, and development of woody tissue in an herbaceous plant. Soils are most commonly deficient in nitrogen and phosphorus. Nitrogen-deficient plants exhibit many of the symptoms just described. Leaves develop chlorosis; stems are short and slender; and anthocyanin discoloration occurs on stems, petioles, and lower leaf surfaces. Phosphorus-deficient plants are often stunted, with leaves turning a characteristic dark green, often with the accumulation of anthocyanin. Typically, older leaves are affected first as the phosphorus is mobilized to young growing tissue. Iron deficiency is characterized by chlorosis between veins in young leaves.

2. The word “exhibit” in the passage is closest in meaning to
  - (A) fight off
  - (B) show
  - (C) cause
  - (D) spread
  
3. According to paragraph 2, which of the following symptoms occurs in phosphorus-deficient plants but not in plants deficient in nitrogen or iron?
  - (A) Chlorosis on leaves
  - (B) Change in leaf pigmentation to a dark shade of green
  - (C) Short, stunted appearance of stems
  - (D) Reddish pigmentation on the leaves or stem
  
4. According to paragraph 2, a symptom of iron deficiency is the presence in young leaves of
  - (A) deep red discoloration between the veins
  - (B) white or yellow tissue between the veins
  - (C) dead spots between the veins
  - (D) characteristic dark green veins

Much of the research on nutrient deficiencies is based on growing plants hydroponically, that is, in soilless liquid nutrient solutions. This technique allows researchers to create solutions that selectively omit certain nutrients and then observe the resulting effects on the plants. Hydroponics has applications beyond basic research, since it facilitates the growing of greenhouse vegetables during winter. Aeroponics, a technique in which plants are suspended and the roots misted with a nutrient solution, is another method for growing plants without soil.

5. The word “facilitates” in the passage is closest in meaning to
  - (A) slows down
  - (B) affects
  - (C) makes easier
  - (D) focuses on

6. According to paragraph 3, what is the advantage of hydroponics for research on nutrient deficiencies in plants?
- (A) It allows researchers to control what nutrients a plant receives.
  - (B) It allows researchers to observe the growth of a large number of plants simultaneously.
  - (C) It is possible to directly observe the roots of plants.
  - (D) It is unnecessary to keep misting plants with nutrient solutions.
7. The word “suspended” in the passage is closest in meaning to
- (A) grown
  - (B) protected
  - (C) spread out
  - (D) hung

## PARAGRAPH 5

Scientists have known for some time that certain plants, called hyperaccumulators, can concentrate minerals at levels a hundredfold or greater than normal. A survey of known hyperaccumulators identified that 75 percent of them amassed nickel; cobalt, copper, zinc, manganese, lead, and cadmium are other minerals of choice. Hyperaccumulators run the entire range of the plant world. They may be herbs, shrubs, or trees. Many members of the mustard family, spurge family, legume family, and grass family are top hyperaccumulators. Many are found in tropical and subtropical areas of the world, where accumulation of high concentrations of metals may afford some protection against plant-eating insects and microbial pathogens.

8. Why does the author mention “herbs,” “shrubs,” and “trees”?
- (A) To provide examples of plant types that cannot tolerate high levels of harmful minerals
  - (B) To show why so many plants are hyperaccumulators
  - (C) To help explain why hyperaccumulators can be found in so many different places
  - (D) To emphasize that hyperaccumulators occur in a wide range of plant types
9. The word “afford” in the passage is closest in meaning to
- (A) offer
  - (B) prevent
  - (C) increase
  - (D) remove

Only recently have investigators considered using these plants to clean up soil and waste sites that have been contaminated by toxic levels of heavy metals—an environmentally friendly approach known as phytoremediation. This scenario begins with the planting of hyperaccumulating species in the target area, such as an abandoned mine or an irrigation pond contaminated by runoff. Toxic minerals would first be absorbed by roots but later relocated to the stem and leaves. A harvest of the shoots would remove the toxic compounds off site to be burned or composted to recover the metal for industrial uses. After several years of cultivation and harvest, the site would be restored at a cost much lower than the price of excavation and reburial, the standard practice for remediation of contaminated soils. For example, in field trials, the plant alpine pennycress removed zinc and cadmium from soils near a zinc smelter, and Indian mustard, native to Pakistan and India, has been effective in reducing levels of selenium salts by 50 percent in contaminated soils.

10. Which of the sentences below best expresses the essential information in the highlighted sentence in paragraph 6? Incorrect choices change the meaning in important ways or leave out essential information.
- (A) Before considering phytoremediation, hyperaccumulating species of plants local to the target area must be identified.
  - (B) The investigation begins with an evaluation of toxic sites in the target area to determine the extent of contamination.
  - (C) The first step in phytoremediation is the planting of hyperaccumulating plants in the area to be cleaned up.
  - (D) Mines and irrigation ponds can be kept from becoming contaminated by planting hyperaccumulating species in targeted areas.
11. It can be inferred from paragraph 6 that compared with standard practices for remediation of contaminated soils, phytoremediation
- (A) does not allow for the use of the removed minerals for industrial purposes
  - (B) can be faster to implement
  - (C) is equally friendly to the environment
  - (D) is less suitable for soils that need to be used within a short period of time
12. Why does the author mention “Indian mustard”?
- (A) To warn about possible risks involved in phytoremediation
  - (B) To help illustrate the potential of phytoremediation
  - (C) To show that hyperaccumulating plants grow in many regions of the world
  - (D) To explain how zinc contamination can be reduced

Scientists have known for some time that certain plants, called hyperaccumulators, can concentrate minerals at levels a hundredfold or greater than normal. ■ A survey of known hyperaccumulators identified that 75 percent of them amassed nickel; cobalt, copper, zinc, manganese, lead, and cadmium are other minerals of choice. ■ Hyperaccumulators run the entire range of the plant world. ■ They may be herbs, shrubs, or trees. ■ Many members of the mustard family, spurge family, legume family, and grass family are top hyperaccumulators. Many are found in tropical and subtropical areas of the world, where accumulation of high concentrations of metals may afford some protection against plant-eating insects and microbial pathogens.

13. Look at the four squares [■] that indicate where the following sentence can be added to the passage.

**Certain minerals are more likely to be accumulated in large quantities than others.**

Where would the sentence best fit?

- (A) Scientists have known for some time that certain plants, called hyperaccumulators, can concentrate minerals at levels a hundredfold or greater than normal. **Certain minerals are more likely to be accumulated in large quantities than others.** A survey of known hyperaccumulators identified that 75 percent of them amassed nickel; cobalt, copper, zinc, manganese, lead, and cadmium are other minerals of choice. ■ Hyperaccumulators run the entire range of the plant world. ■ They may be herbs, shrubs, or trees. ■ Many members of the mustard family, spurge family, legume family, and grass family are top hyperaccumulators. Many are found in tropical and subtropical areas of the world, where accumulation of high concentrations of metals may afford some protection against plant-eating insects and microbial pathogens.
- (B) Scientists have known for some time that certain plants, called hyperaccumulators, can concentrate minerals at levels a hundredfold or greater than normal. ■ A survey of known hyperaccumulators identified that 75 percent of them amassed nickel; cobalt, copper, zinc, manganese, lead, and cadmium are other minerals of choice. **Certain minerals are more likely to be accumulated in large quantities than others.** Hyperaccumulators run the entire range of the plant world. ■ They may be herbs, shrubs, or trees. ■ Many members of the mustard family, spurge family, legume family, and grass family are top hyperaccumulators. Many are found in tropical and subtropical areas of the world, where accumulation of high concentrations of metals may afford some protection against plant-eating insects and microbial pathogens.

- Ⓒ Scientists have known for some time that certain plants, called hyperaccumulators, can concentrate minerals at levels a hundredfold or greater than normal. ■ A survey of known hyperaccumulators identified that 75 percent of them amassed nickel; cobalt, copper, zinc, manganese, lead, and cadmium are other minerals of choice. ■ Hyperaccumulators run the entire range of the plant world. **Certain minerals are more likely to be accumulated in large quantities than others.** They may be herbs, shrubs, or trees. ■ Many members of the mustard family, spurge family, legume family, and grass family are top hyperaccumulators. Many are found in tropical and subtropical areas of the world, where accumulation of high concentrations of metals may afford some protection against plant-eating insects and microbial pathogens.
- Ⓓ Scientists have known for some time that certain plants, called hyperaccumulators, can concentrate minerals at levels a hundredfold or greater than normal. ■ A survey of known hyperaccumulators identified that 75 percent of them amassed nickel; cobalt, copper, zinc, manganese, lead, and cadmium are other minerals of choice. ■ Hyperaccumulators run the entire range of the plant world. ■ They may be herbs, shrubs, or trees. **Certain minerals are more likely to be accumulated in large quantities than others.** Many members of the mustard family, spurge family, legume family, and grass family are top hyperaccumulators. Many are found in tropical and subtropical areas of the world, where accumulation of high concentrations of metals may afford some protection against plant-eating insects and microbial pathogens.

14. **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.

Write your answer choices in the spaces where they belong. You can either write the letter of your answer choice or you can copy the sentence.

**Plants need to absorb certain minerals from the soil in adequate quantities for normal growth and development.**

- 
- 
-



**Answer Choices**

- A** Some plants can tolerate comparatively low levels of certain minerals, but such plants are of little use for recycling nutrients back into depleted soils.
- B** When plants do not absorb sufficient amounts of essential minerals, characteristic abnormalities result.
- C** Mineral deficiencies in many plants can be cured by misting their roots with a nutrient solution or by transferring the plants to a soilless nutrient solution.
- D** Though beneficial in lower levels, high levels of salts, other minerals, and heavy metals can be harmful to plants.
- E** Because high concentrations of sodium chloride and other salts limit growth in most plants, much research has been done in an effort to develop salt-tolerant agricultural crops.
- F** Some plants are able to accumulate extremely high levels of certain minerals and thus can be used to clean up soils contaminated with toxic levels of these minerals.

# LISTENING

This section measures your ability to understand conversations and lectures in English.


Listen to each conversation and lecture only one time. After each conversation and lecture, you will answer some questions about it. Answer each question based on what is stated or implied by the speakers.

You may take notes while you listen and use your notes to help you answer the questions. Your notes will **not** be scored.

In some questions you will see this icon: . This means that you will hear, but not see, the question.

Answer each question before moving on. Do not return to previous questions.

It will take about 60 minutes to listen to the conversations and lectures and answer the questions about them.


**Directions:** Listen to Track 22. 



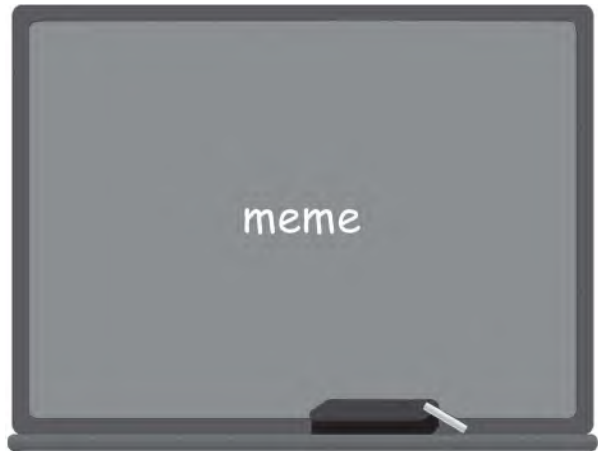
**Directions:** Now answer the questions.

1. What do the speakers mainly discuss?
  - (A) Why the woman has little in common with her roommates
  - (B) How the woman can keep up in her academic studies
  - (C) The woman's adjustment to life at the university
  - (D) The woman's decision to transfer to another university
  
2. Why does the woman mention her hometown?
  - (A) To draw a contrast to her current situation
  - (B) To acknowledge that she is accustomed to living in big cities
  - (C) To indicate that she has known some people on campus for a long time
  - (D) To emphasize her previous success in academic studies
  
3. What does the woman imply about the incident that occurred in her sociology class?
  - (A) She was embarrassed because she gave an incorrect answer.
  - (B) She was upset because the professor seemed to ignore her.
  - (C) She was confused by the organization of the professor's lecture.
  - (D) She was surprised by the comments of the other students.
  
4. According to the counselor, why should the woman visit her professor's office?  
*Choose 2 answers.*
  - (A) To offer a compliment
  - (B) To offer to help other students
  - (C) To introduce herself
  - (D) To suggest ways of making the class more personal

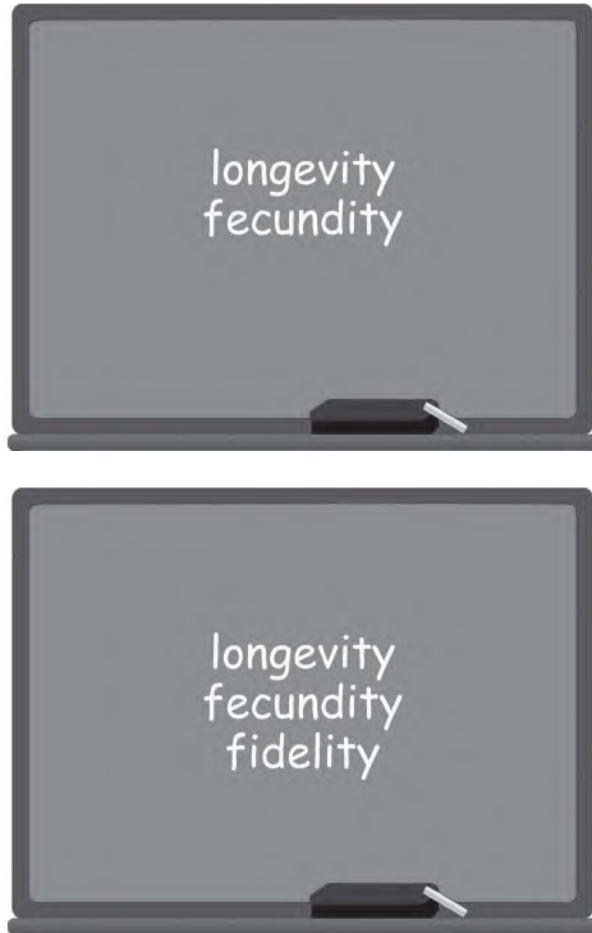
5. What does the woman imply about joining the string quartet?
- Ⓐ It would enable her to continue a hobby she gave up when she was ten.
  - Ⓑ It would allow her to spend more time in her major area of study.
  - Ⓒ It would help her stop worrying about her academic studies.
  - Ⓓ It would be a way to meet students with similar interests.

**Directions:** Listen to Track 23. 

Sociology








**Directions:** Now answer the questions.

6. What is the main purpose of the lecture?
- (A) To introduce a method that can help students remember new information
  - (B) To introduce a way to study how information passes from one person to another
  - (C) To explain the differences between biological information and cultural information
  - (D) To explain the differences between stories, songs, and other pieces of information
7. Why does the professor tell the story about alligators?
- (A) To explain the difference between true and false stories
  - (B) To draw an analogy between alligator reproduction and cultural transmission
  - (C) To give an example of a piece of information that functions as a meme
  - (D) To show how a story can gradually change into a song

8. According to the professor, which of the following are examples of meme transfer? *Choose 2 answers.*
- A Telling familiar stories
  - B Sharing feelings
  - C Composing original music
  - D Learning a scientific theory
9. What example does the professor give of a meme's longevity?
- A A story has been changing since it first appeared in the 1930s.
  - B A person remembers a story for many years.
  - C A gene is passed on through many generations without changing.
  - D A song quickly becomes popular all over the world.
10. What does the professor compare to a housefly laying many eggs?
- A A child learning many different ideas from his or her parents
  - B Alligators reproducing in New York sewers
  - C Different people remembering different versions of a story
  - D A person singing the "Twinkle, twinkle" song many times
11. Listen to Track 24. 
- A To explain why some memes do not change much
  - B To ask the students for their opinion about songs as memes
  - C To acknowledge a problem with the meme theory
  - D To ask the students to test an idea about memes




# SPEAKING

This section measures your ability to speak in English about a variety of topics.

There are six questions in this section. For each question, you will be given a short time to prepare your response. When the preparation time is up, answer the question as completely as possible in the time indicated for that question. You should record your responses so that you can review them later and compare them with the answer key and scoring rubrics.

1. You will now be asked to speak about a familiar topic. Give yourself 15 seconds to prepare your response. Then record yourself speaking for 45 seconds.


Listen to Track 32. 

Talk about a place you enjoyed going to or visiting when you were a child. Describe the place. Explain why you enjoyed it.

**Preparation Time: 15 seconds**

**Response Time: 45 seconds**

2. You will now be asked to give your opinion about a familiar topic. Give yourself 15 seconds to prepare your response. Then record yourself speaking for 45 seconds.

Listen to Track 33. 

Do you agree or disagree with the following statement? Why or why not? Use details and examples to explain your answer.

**It is more important to study math or science than it is to study art or literature.**

**Preparation Time: 15 seconds**

**Response Time: 45 seconds**

# WRITING

This section measures your ability to write in English to communicate in an academic environment.

There are two writing questions in this section.

For question 1, you will read a passage and listen to a lecture about the same topic. You may take notes while you read and listen. Then you will write a response to a question based on what you have read and heard. You may look back at the passage when answering the question. You may use your notes to help you answer the question. You have 20 minutes to plan and write your response.

For question 2, you will write an essay based on your own knowledge and experience. You have 30 minutes to plan and complete your essay.

1. **Directions:** Give yourself 3 minutes to read the passage.

**Reading Time: 3 minutes**

As early as the twelfth century A.D., the settlements of Chaco Canyon in New Mexico in the American Southwest were notable for their “great houses,” massive stone buildings that contain hundreds of rooms and often stand three or four stories high. Archaeologists have been trying to determine how the buildings were used. While there is still no universally agreed upon explanation, there are three competing theories.

One theory holds that the Chaco structures were purely residential, with each housing hundreds of people. Supporters of this theory have interpreted Chaco great houses as earlier versions of the architecture seen in more recent Southwest societies. In particular, the Chaco houses appear strikingly similar to the large, well-known “apartment buildings” at Taos, New Mexico, in which many people have been living for centuries.


A second theory contends that the Chaco structures were used to store food supplies. One of the main crops of the Chaco people was grain maize, which could be stored for long periods of time without spoiling and could serve as a long-lasting supply of food. The supplies of maize had to be stored somewhere, and the size of the great houses would make them very suitable for the purpose.

A third theory proposes that houses were used as ceremonial centers. Close to one house, called Pueblo Alto, archaeologists identified an enormous mound formed by a pile of old material. Excavations of the mound revealed deposits containing a surprisingly large number of broken pots. This finding has been interpreted as evidence that people gathered at Pueblo Alto for special ceremonies. At the ceremonies, they ate festive meals and then discarded the pots in which the meals had been prepared or served. Such ceremonies have been documented for other Native American cultures.

Listen to Track 40. 



**Directions:** You have 20 minutes to plan and write your response. Your response will be judged on the basis of the quality of your writing and on how well your response presents the points in the lecture and their relationship to the reading passage. Typically, an effective response will be 150 to 225 words.

Listen to Track 41. 

Response Time: 20 minutes

Summarize the points made in the lecture, being sure to explain how they cast doubt on the specific theories discussed in the reading passage.

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

