

# EVOLUTION OF THE FLOWERING PLANTS

READING PRACTICE SETS

COMPILED FOR YOU BY TERRA NOVA ENGLISH LANGUAGE CENTER



## TOEFL iBT READING PRACTICE SET

**Directions:** Read the passage and answer the questions. Give yourself 18 minutes to complete this practice set.

### EVOLUTION OF THE FLOWERING PLANTS

1 Many aspects of the history of flowering plants, also known as angiosperms, remain mysterious. Evidence of the earliest angiosperms comes from fossilized leaves, stems, fruits, pollen, and, very rarely, flowers. In addition, there has been much study of modern plant morphology, or structure, and genetics in order to determine which living species might be most closely related to the ancestors of angiosperms. Despite intensive efforts for over 200 years, scientists have still **not reached consensus on** which type of plant was the ancestor to the angiosperms, and when and where the angiosperms first evolved. Indeed, Charles Darwin himself called the origin of the flowering plants an “abominable mystery.”

2 What type of plant was the ancestor to the angiosperms? Most botanists agree that the flowering plants are monophyletic in origin, meaning that they evolved from a common ancestor. **[A]** Some paleontologists have suggested that the common ancestor may have been a type of cycad. Cycads, like pines, spruces, junipers, or *Ginkgo biloba*, are gymnosperms. **[B]** Other paleontologists maintain that the angiosperms may have evolved from seed-bearing ferns, now extinct. **[C]** Finally, analysis of the morphological traits of some primitive living plants suggests that the ancestor may have been related to the modern pines. **[D]** The question of angiosperm ancestry remains unresolved.

3 The time and place of the first appearance of flowering plants have long been a topic of great interest. There is good fossil evidence that early angiosperms, including those resembling modern magnolias, were present in the Early Cretaceous, more than 100 million years ago. Angiosperms became increasingly abundant during that period. Between 100 million and 66 million years ago, a period known as the Late Cretaceous, angiosperms increased from less than 1 percent of flora to well over 50 percent. Many of the modern plant families appeared during that time. In the Paleogene, from 66 million to 23 million years ago, angiosperms increased to comprise 90 percent or more of Earth’s total flora. Where did these successful plants first originate and spread from?

4 Analysis of the fossil leaf structure and geographic distribution of the earliest Cretaceous angiosperms has led many biogeographers to conclude that they evolved in the tropics and then migrated poleward. It is known that angiosperms did not become dominant in the high latitudes until the Late Cretaceous. Paleontologists have recovered **fossil angiosperm leaves, stems, and pollen** from Early Cretaceous deposits in eastern South America and western Africa. These two continents were joined together as part of Gondwanaland, one of two supercontinents that existed at that time. The locations of these early angiosperm finds would have been close to the equator during the Early Cretaceous and are conformable with a model by which angiosperms spread from the tropics poleward.

5 **A large number of botanists disagree with an African-South American center for the evolution and dispersal of the angiosperms, pointing out that many of the most primitive forms of flowering plants are found in the South Pacific, including portions of Fiji, New Caledonia, New Guinea, eastern Australia, and the Malay Archipelago.** Recent genetic research has identified the rare tropical shrub *Amborella trichopoda* as being the living plant most closely related to the ancestor of all the angiosperms. This small shrub, which has tiny yellow-white flowers and red fruit, is found exclusively on the main island, Grande Terre, of New Caledonia, a group of islands in the South Pacific. Many botanists conclude that the best explanation for the large numbers of primitive living angiosperms in the South Pacific region is that this is where the flowering plants first evolved and these modern species are relics of this early evolution. Comparisons of the DNA of *Amborella trichopoda* and hundreds of species of flowering plants suggest that the first angiosperm arose and the development of separate species occurred about 135 million years ago.

6 Recently discovered fossils complicate our understanding of the origin of the angiosperms even further. Thus, in 2017, a group of paleontologists led by Qiang Fu reported that they found 174-million-year-old fossils of a flowering plant, *Nanjinganthus dendrostyla*, in Early Jurassic deposits near Nanjing, China. If this plant is an angiosperm, it extends the first appearance of angiosperms by 40 million years. The interpretation of *Nanjinganthus* as a flowering plant has been disputed by a number of scientists suggesting that the fossils are more consistent with a conifer.

- The phrase **not reached consensus on** in the passage is closest in meaning to
  - not formulated a theory about
  - not agreed on
  - not been able to explain
  - not found evidence for
- According to paragraph 1, all of the following types of evidence have been important for studying the history of angiosperms EXCEPT
  - fossils of angiosperm stems and leaves
  - genetic studies of modern angiosperms
  - knowledge of the structure of modern angiosperms
  - collections of well-preserved angiosperm flowers
- According to paragraph 2, which of the following do most botanists now believe about angiosperms?
  - The ancestor of today's angiosperms was most likely a type of cycad.
  - Today's angiosperms can be traced back to a single ancestor.
  - Angiosperms likely evolved from three very different plants.
  - Angiosperms share a common ancestor with modern pines.
- Which of the following can be inferred from paragraph 3 about angiosperms during the Early Cretaceous?
  - They represented less than 1 percent of plant life.
  - Their numbers remained stable during this period.
  - They existed in forms that are very unlike plants living today.
  - They only rarely left traces in the fossil record.
- Why does the author include the information that **fossil angiosperm leaves, stems, and pollen** have been found in places that were once joined together as part of Gondwanaland?
  - To provide support for the claim that angiosperms first appeared in the tropics
  - To explain how scientists have determined the geographical location of supercontinents in the past
  - To provide evidence that angiosperms evolved in similar ways in different parts of the world
  - To challenge the idea that angiosperms spread toward the poles during the Cretaceous
- Which of the sentences below best expresses the essential information in the highlighted sentence in paragraph 5? Incorrect choices change the meaning in important ways or leave out essential information.
  - Many botanists who agree with the idea of an African-South American center for the evolution and dispersal of angiosperms point to primitive South Pacific angiosperms as evidence.
  - A large number of botanists argue that the very primitive forms of angiosperms found in the South Pacific call into question the theory that angiosperm evolution began in Africa and South America.
  - Angiosperms found in Fiji, New Caledonia, New Guinea, eastern Australia, and the Malay Archipelago are more primitive than angiosperms found in other parts of the world.
  - Botanists disagree over whether the most primitive forms of living plants are located in parts of Africa and South America or in the South Pacific.

7. What can be inferred from paragraph 5 about primitive living angiosperms in the South Pacific?
- (A) They more closely resemble the earliest angiosperms than do most other living angiosperms.  
(B) They are very similar to angiosperm plants in South America and Africa.  
(C) They are found only on a group of islands called New Caledonia.  
(D) They provide evidence that angiosperms evolved in several sites simultaneously.
8. According to paragraph 6, which of the following is true of the fossils discovered near Nanjing, China?
- (A) They have made it even more challenging to understand the origin of angiosperms.  
(B) They contain flowers that appear modern for the age of the fossils.  
(C) They have convinced all paleobotanists that angiosperms originated in China.  
(D) They are not as old as angiosperm fossils discovered in the South Pacific.
9. Look at the four squares [A-D] that indicate where the following sentence could be added to the passage.

**However, their origin and evolution have been under considerable dispute.**

Where would the sentence best fit?

10. **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.**

**Despite many years of research, some basic questions about the history of angiosperms remain unanswered.**

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#### Answer Choices

- (A) One of the major difficulties of studying angiosperm evolution is that fossils of angiosperms are very rarely discovered.
- (B) Fossil evidence led some botanists to conclude that angiosperms first evolved in the tropics and spread outward toward the poles.
- (C) Emerging research from fossils found in South America, the South Pacific, and Asia suggests that the first angiosperms appeared more recently than was once believed.
- (D) Though the original ancestor of angiosperms is unknown, they existed at least by the Early Cretaceous and eventually made up most of the plants on Earth.
- (E) Early Cretaceous fossils have confirmed that the ancestor to the angiosperms was a plant resembling the modern magnolia.
- (F) The study of living angiosperms in the South Pacific and new fossil discoveries in China have led to new theories about where angiosperms first evolved.