TOEFL iBT Reading Comprehension Practice Test 002

Test Instructions

- **Directions:** You will read a passage, followed by questions about it. Carefully read the question text. Then choose the correct answer.

Natural selection

Natural selection is the differential survival and reproduction of individuals due to differences in phenotype. It is a key mechanism of evolution, the change in the heritable traits characteristic of a population over generations. Charles Darwin popularised the term "natural selection", contrasting it with artificial selection, which in his view is intentional, whereas natural selection is not.

Variation exists within all populations of organisms. This occurs partly because random mutations arise in the genome of an individual organism, and their offspring can inherit such mutations. Throughout the lives of the individuals, their genomes interact with their environments to cause variations in traits. The environment of a genome includes the molecular biology in the cell, other cells, other individuals, populations, species, as well as the abiotic environment. **Because individuals with certain variants of the trait tend to survive and reproduce more than individuals with other less successful variants, the population evolves.** Other factors affecting reproductive success include sexual selection (now often included in natural selection) and fecundity selection.

Natural selection acts on the **phenotype**, the characteristics of the organism which actually interact with the environment, but the genetic (heritable) basis of any phenotype that gives that phenotype a reproductive advantage may become more common in a population. Over time this process can result in populations that specialise for particular ecological niches (**microevolution**) and may eventually result in speciation (the emergence of new species, macroevolution). In other words, natural selection is a key process in the evolution of a population.

Natural selection is a cornerstone of modern biology. (A) The concept, published by Darwin and Alfred Russel Wallace in a joint presentation of papers in 1858, was elaborated in Darwin's influential 1859 book On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life. (B) He described natural selection as analogous to artificial selection, a process by which animals and plants with traits considered desirable by human breeders are systematically favoured for reproduction. (C) The concept of natural selection originally developed in the absence of a valid theory of heredity; at the time of Darwin's writing, science had yet to develop modern theories of genetics. (D) The union of traditional Darwinian evolution with subsequent discoveries in classical genetics formed the modern synthesis of the mid-20th century. The addition of molecular genetics has led to evolutionary developmental biology, which explains evolution at the molecular level. While genotypes can slowly change by random genetic drift, natural selection remains the primary explanation for adaptive evolution.

Question 1: According to the passage, what is natural selection?

A) The random mutations of the genome of an individual organism

B) The differential survival and reproduction of individuals due to differences in phenotype

C) The heritable traits of a population over generations

D) The intentional survival and reproduction of individuals due to differences in phenotype

Question 2: According to the passage, what is the environment of a genome?

A) The molecular biology in the cell, other cells, other individuals, populations, species, and the abiotic environment

B) The abiotic environment
C) The characteristics of the organism
D) The genetic basis of any phenotype

Question 3: According to the passage, which of the following is NOT true about natural selection?

A) It is intentional
B) It is a key mechanism of evolution
C) It is a key process in the evolution of a population
D) It acts on the phenotype

Question 4: Which of the following can be inferred from the passage about natural selection?

A) It results in populations that specialize for particular ecological niches
B) It was published by Darwin in 1859
C) It is the only explanation for adaptive evolution
D) It is a cornerstone of modern biology

Question 5: Why does the author mention Charles Darwin in the passage?

A) To elaborate on the theory of heredity
B) To explain the evolution of a population
C) To describe the concept of natural selection
D) To contrast natural selection with artificial selection

Question 6: The word "phenotype" in the passage is closest in meaning to...

A) The heritable traits of a population over generations
B) The environment of a genome
C) The random mutations of the genome of an individual organism
D) The characteristics of the organism

Question 7: The phrase "microevolution" in the passage is closest in meaning to...

A) The emergence of new species
B) The process of natural selection
C) The specialization of populations for particular ecological niches
D) The evolution of a population

Question 8: Which of the following sentences best expresses the essential information in the following sentence?

"Because individuals with certain variants of the trait tend to survive and reproduce more than individuals with other less successful variants, the population evolves."

A) Some individuals have better survival and reproduction rates than others, causing population evolution.

B) The population evolves due to the survival and reproduction of individuals with specific traits.

C) Traits that increase survival and reproduction are passed down, leading to population evolution.

D) Evolution occurs when traits are passed down through generations.

Question 9: Look at the four letters – (A), (B), (C) and (D) – that indicate where the following sentence can be added to the passage.

"The book explained the concept of natural selection in detail."

Where would the sentence best fit?

A) (D)

B) (B)

C) (A)

D) (C)

Question 10: Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage.

"Natural selection, a key mechanism of evolution, refers to the differential survival and reproduction of individuals due to differences in phenotype, as a result of the interaction between their genomes and environment."

A) The genetic basis of any phenotype that gives it a reproductive advantage may become more common in a population over time, leading to the evolution of populations and possibly speciation.

B) The process of natural selection is caused by random genetic drift.

C) Natural selection results from the interaction between the genome and environment of an individual organism.

D) Artificial selection is the same as natural selection, but with the intention of humans.

E) Natural selection only occurs in plants, not animals.

F) Charles Darwin popularised the term "natural selection" and described it as a process that is not intentional, unlike artificial selection.

Vocabulary

Natural Selection - The differential survival and reproduction of individuals due to differences in phenotype, a key mechanism of evolution.

Evolution - The change in the heritable traits characteristic of a population over generations.

Charles Darwin - The scientist who popularized the term "natural selection".

Artificial Selection - The intentional selection of certain traits in animals and plants through human breeders.

Phenotype - The characteristics of an organism which interact with the environment.

Genome - The complete set of genetic information in an organism.

Microevolution - The process by which populations of organisms specialize for particular ecological niches.

Speciation - The emergence of new species through the evolution of a population.

Origin of Species - Darwin's 1859 book that elaborates on the concept of natural selection.

Modern Synthesis - The union of traditional Darwinian evolution with discoveries in classical genetics that formed the mid-20th century understanding of evolution.

Answer Keys

Question	Answer
1	B
2	A
3	A
4	D
5	D

Question	Answer
6	D
7	C
8	B
9	B
10	A C F