**Conversational Topic**

**Geology as a Science**

Geology is the study of the planet Earth. Geology deals with many things: the origin and development of the Earth, the materials which make it up, the structure of the surface and ***the interior of the planet***, the processes which act on and within the Earth. Geologists interpret these physical, chemical and biological processes which operated on the planet during 4, 500, 000, 000 years of the planet’s history.

Geology also provides ***tools*** to determine ***the relative and absolute ages*** of rocks found in a given location, and also to describe the histories of those rocks. By combining these tools, geologists are able to chronicle the geological history of the Earth as a whole, and also to demonstrate the age of the Earth. Geology provides the ***primary evidence*** for ***plate tectonics***, the evolutionary history of life, and the Earth's past climates.

Geologists use a wide variety of methods to understand the Earth's structure and evolution, including field work, rock description, geophysical techniques, chemical analysis, physical experiments, and ***numerical modelling***. In practical terms, geology is important for mineral and ***hydrocarbon*** ***exploration*** and exploitation, ***evaluating*** water resources, understanding of ***natural hazards***, the ***remediation*** of environmental problems, and providing ***insights*** into past climate change. Geology is a major academic discipline, and it plays an important role in geotechnical engineering.

The word ‘geology’ was first used by Ulisse Aldrovandi in 1603, then by Jean-André Deluc in 1778 and introduced as a fixed term by Horace-Bénédict de Saussure in 1779. The word is derived from the Greek γῆ, gê, meaning "earth" and λόγος, logos, meaning "speech". But according to another source, the word "geology" comes from a Norwegian, Mikkel Pedersøn Escholt (1600–1699), who was a ***priest*** and ***scholar***. Escholt first used the definition in his book titled, *Geologia Norvegica* (1657).

William Smith (1769–1839) ***drew*** some of the first geological maps and began the process of ***ordering*** ***rock strata*** (layers) by examining the ***fossils*** contained in them.

James Hutton is often viewed as the first modern geologist. In 1785 he presented a paper entitled *Theory of the Earth* to the Royal Society of Edinburgh. In his paper, he explained his theory that the Earth must be much older than had ***previously*** been supposed to allow enough time for mountains to be eroded and for ***sediments*** to form new rocks at the bottom of the sea, which ***in turn*** were raised up to become dry land.

Sir Charles Lyell first published his famous book, *Principles of Geology*, in 1830. This book, which influenced the ***thought*** of Charles Darwin, successfully promoted the doctrine of uniformitarianism. This theory states that slow geological processes have occurred throughout the Earth's history and are still occurring today.

Much of 19th-century geology revolved around the question of the Earth's exact age. ***Estimates*** varied from a few hundred thousand to billions of years. By the early 20th century, radiometric dating allowed the Earth's age to be estimated at two billion years. The ***awareness*** of this vast amount of time opened the door to new theories about the processes that shaped the planet.

Some of the most significant ***advances*** in 20th-century geology have been the development of the theory of plate tectonics in the 1960s and the refinement of estimates of the planet's age. Plate tectonics theory arose from two separate geological observations: ***seafloor spreading*** and ***continental drift***. The theory revolutionized the Earth sciences. Today the Earth is known to be ***approximately*** 4.5 billion years old.

**Активная лексика (в порядке встречаемости в тексте)**

**the interior of the planet** – недра (земли)

**tool –** инструмент

**the relative and absolute ages** – относительный и абсолютный возраст

**primary evidence** – непосредственные доказательства

**plate tectonics –** тектоника плит

**numerical modeling –** численное моделирование

**hydrocarbons** – углеводороды

**exploration** – разведка

**evaluating** – оценка

**natural hazards –** природные катаклизмы

**remediation** – излечение, избавление, решение

**insight** – понимание, представление, оценка

**priest** – священник

**scholar –** ученый

**draw –** чертить**,** рисовать, делать набросок

**ordering** – расположение в правильном порядке

**rock strata** – слои породы

**fossils** – окаменелости

**previously** – ранее

**sediments** – осадки

**in turn** – в свою очередь

**thought** – мысль, идея

**estimates** – оценки

**awareness** – знание, осведомленность

**advances** – успехи

**seafloor spreading** – спрединг океанического дна

**continental drift –** континентальный дрейф

**approximately** – приблизительно, около

**Exercises**

**Ex. 1. Make sure that you know the meaning of the following words.**

Natural hazards, rock strata, seafloor spreading, continental drift, exploration, plate tectonics, the interior of the planet, approximately, evaluating.

**Ex. 2. Finish the sentences*.***

1. Geology deals with many things: …

2. Geology provides tools …

3. Geology also provides tools …

4. Geology provides the primary evidence for …

5. Geologists use a wide variety of methods to understand the Earth's structure and evolution, including …

6. Some of the most significant advances in 20th-century geology have been … .

7. Plate tectonics theory arose from two separate geological observations: ...

**Ex. 3. Say if the statements are true or false.**

1. The word ‘geology’ was first used in 1503.

2. William Smith promoted the doctrine of uniformitarianism.

3. James Hutton is often viewed as the first modern geologist.

4. The theory of uniformitarianism states that slow geological processes have occurred throughout the Earth's history and are still occurring today.

5. Today the Earth is known to be approximately 4.5 million years old.

**Ex. 4. Translate into English.**

Давать представление (понимание), относительный возраст пород, тектоника плит, химические и биологические процессы, добыча углеводородов, оценка водных ресурсов, полевые работы, природные катаклизмы, изучение окаменелостей.

**Ex. 5. Answer the following questions.**

1. What is geology?

2. What processes does geology interpret?

3. What methods do geologists use to understand the Earth's structure and evolution?

4. When was the word ‘geology’ first used?

5. When was the word ‘geology’ introduced as a fixed term?

6. Who drew some of the first geological maps?

7. Who is often viewed as the first modern geologist?

8. Who promoted the doctrine of uniformitarianism?

9. What does the theory of uniformitarianism suggest?

10. Around what question did 19th-century geology revolve?

11. What were the most significant advances in 20th-century geology?