CHAPTER 14 NOTES

Land Environments

 Earth was formed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ billion years ago.

 Gravity pulled the densest elements to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the planet.

 After about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ million years, a solid crust formed on the surface.

Atmosphere

 The gases that likely made up the atmosphere are those expelled by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Clues in Rocks

 A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is any preserved evidence of an organism.

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_organisms decompose before they have a chance to become fossilized.

Fossil Formation

 Nearly all fossils are formed in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rock.

 The sediments build up until they cover the organism’s remains.

Minerals \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the organic matter or fill the empty pore spaces of the organism.

Dating Fossils

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ dating is a method used to determine the age of rocks by

comparing them with those in other layers.

Radiometric Dating

 Using the decay of radioactive \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to measure the age of a rock.

The Geologic Time Scale

 The geological time scale is a model that expresses the major geological and biological

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in Earth’s history.

The Geologic time scale is divided into different sections of time.

Precambrian

 Nearly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ percent of Earth’s entire history, stretching from the formation

of Earth to the beginning of the Paleozoic era about 542 million years ago.

Autotrophic prokaryotes enriched the atmosphere with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

The Paleozoic Era

 The ancestors of most major animal groups diversified in what scientists call the

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Life in the oceans continued to evolve at the end of the Cambrian period.

Fish, land plants, and insects appeared during the Ordovician and Silurian periods.

The first \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ emerged in the Devonian.

 A mass extinction ended the Paleozoic era at the end of the Permian period.

 Between \_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_ percent of the species alive went extinct.

The Mesozoic Era

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ first appeared late in the Triassic

period, and flowering plants evolved.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ evolved from a group of predatory dinosaurs in the middle of the

Jurassic period.

About \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ million years ago, a meteorite struck the Earth.

Plate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ describes the movement of several large plates that make up the surface of Earth.

 These plates, some of which contain continents, move atop a partially \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

layer of rock underneath them.

The Cenozoic Era

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ became the dominant land animals.

 After the mass extinction at the end of the Mesozoic era, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of all

kinds began to diversify.

Origins: Early Ideas

 Spontaneous \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the idea that life arises from nonlife.

 Francesco Redi, an Italian scientist, tested the idea that flies arose spontaneously from

rotting meat.

Origins: Modern Ideas

The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ hypothesis was an early hypothesis about the origins of life.

 Organic molecules could have been synthesized from simple reactions.

Cellular Evolution

 Scientists hypothesize that the first cells were \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

 Many scientists think that modern prokaryotes called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are

the closest relatives of Earth’s first cells.

Archaea are autotropic

They obtain their energy from the Sun.

Archaea also do not need or produce oxygen.

Prokaryotes, called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, have been found in rocks as old as 3.5

billion years.

The Endosymbiont Theory

 The ancestors of eukaryotic cells lived in association with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells.

 The relationship between the cells became mutually \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and the

prokaryotic symbionts became organelles in eukaryotic cells.

 This theory explains the origin of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.