SUMMARY OF CHAPTER 10

THE HUMAN ORGANISM AND THE ORIGIN OF LIFE

ST PROGRAM ONLY

1. THE ORIGIN OF LIFE

- Earth is part of the matter that orbited around the Sun and condensed to form our planet (p. 300).
- Earth took shape more than 4.2 billion years ago (p. 300).
- The conditions essential for the emergence of life on Earth made it possible for the synthesis of the first organic molecules and their development into living cells (p. 302). There were four conditions:
  - the presence of essential chemical elements (p. 303)
  - the presence of an energy source (p. 304)
  - the presence of liquid water (p. 304)
  - a very long period of time (p. 305)

2. HISTORY OF LIFE ON EARTH

- Evolution is a very slow process that brings about changes in living organisms (p. 305).
- Natural selection is a process that occurs naturally within a species. It results in the reproduction of organisms with traits that allow them to survive better in their environment (p. 306).
- The geological time scale is a tool that represents the main divisions in the history of Earth based on major events that have occurred in the history of life. There are four eras:
  - Precambrian
  - Paleozoic
  - Mesozoic
  - Cenozoic (p. 310)
- The extinction of a species is the disappearance of all individuals belonging to the species. It is caused by the inability of the individuals to adapt to changes in their environment (p. 310).
- The Permian mass extinction, the most devastating extinction to ever take place on Earth, marked the transition from the Paleozoic era to the Mesozoic era. More than 90 percent of marine life and 70 percent of land-dwelling species became extinct during this time period (p. 311).
- The mass extinction of the Cretaceous period was not as significant as the Permian, but nonetheless caused the disappearance of about 50 percent of marine species and many plants and animals (p. 314).
- Our species, *Homo sapiens*, is the only surviving member of the human lineage. It appeared about 195 000 years ago (p. 317).
- One of the principal traits of our species is bipedalism (p. 317).

3. FOSSILS

- A fossil is any remains or trace of an organism that has been preserved for a very long period of time in Earth's crust (p. 319).
- There are four types of fossils:
  - petrified fossils (p. 321)
  - cast or mould fossils (p. 322)
  - body fossils (p. 322)
  - trace fossils (p. 323)
- A stratigraphic layer is a stratum of sedimentary rock that formed in the same time period as the rock (p. 323).
- Relative dating is a method that helps to establish the order in which fossils formed without identifying their absolute age (p. 324).
- Absolute dating is a method used to determine the age of fossils in years (p. 325).