

CHAPTER 14 Review Questions

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question

1. Which of these is the most important cause of the increase in atmospheric CO₂?
 - A) decaying vegetation
 - B) cattle
 - C) wetlands and swamps
 - D) burning of coal and petroleum
 - E) deforestation
2. A major part of the greenhouse effect is that it involves the absorption of the earth's outgoing radiation by atmospheric gases. What component is most important in this absorption?
 - A) nitrogen
 - B) ozone
 - C) oxygen
 - D) carbon dioxide
 - E) water vapor
3. Measured variations in the Sun's emission of radiation and observed changes in the earth's climate
 - A) have not been clearly linked.
 - B) happen on an 11-year cycle.
 - C) are well understood.
 - D) happen on a 22-year cycle.
4. If the tilt of the earth's axis changes, how does this affect the temperature change across the seasons?
 - A) no consistent relation exists
 - B) less tilt, larger seasonal change
 - C) less tilt, smaller seasonal change
 - D) more tilt, smaller seasonal change
5. Astronomical causes of climate change occur with cycles of
 - A) 450,000 yrs.
 - B) 1 - 5 million yrs
 - C) 23,000 - 100,000 yrs.
 - D) 20,000 yrs.
 - E) 100 million yrs.
6. Requirements for an ice age on Earth include
 - A) smaller obliquity angle.
 - B) continents located at low latitudes.
 - C) larger obliquity angle.
 - D) a weaker Sun.

7. The eccentricity aspect of the astronomical theory refers to
- A) the unpredictability of Earth's weather.
 - B) changes in the rate of Earth's rotation.
 - C) changes in the tilt of Earth's axis.
 - D) changes in the shape of Earth's orbit.
 - E) variations in the energy emitted by the Sun.
8. The primary effect on climate of a volcanic eruption is based on
- A) the explosive force of the eruption.
 - B) how much ash is emitted.
 - C) whether the ash or gas reaches the stratosphere.
 - D) the amount of water evaporated.
 - E) how much gas is emitted.
9. Oxygen isotope analysis measures the
- A) total oxygen present.
 - B) oxygen content of sediment.
 - C) amount of radioactivity due to oxygen.
 - D) rate of oxygen depletion.
 - E) proportion of 2 different types of oxygen atoms.
10. Plate tectonics (continental drift):
- A) may be a key factor in explaining the cooling trend since the 1945.
 - B) may help us better understand the cause of the Ice Age.
 - C) is probably responsible for some climatic changes that occur on a time scale of thousands of years.
11. The person who first developed and strongly advocated the astronomical theory was:
- A) Thomas Schmidlin.
 - B) Milutin Milankovitch.
 - C) Stanley Changnon.
 - D) Randall Cerveny.
 - E) Edward Tarbuck.
12. Extensive tree ring research indicates that the 22_year sunspot cycle may be related to:
- A) rainy episodes in North Africa.
 - B) drought in the western United States.
 - C) El Nino
 - D) warm periods in northern Europe.
13. Which of the following is a possible consequence of a greenhouse warming?
- A) sea-level rise
 - B) lower frequency of hurricanes
 - C) increase in sea ice
 - D) a decrease in global mean precipitation

14. The volcano that caused "the year without a summer" was

- A) Mt. St. Helens.
- B) Krakatoa.
- C) Fuji.
- D) Tambora.
- E) Mt. Pinatubo.

15. When did the supercontinent Pangaea exist?

- A) 1 billion years ago
- B) 4.2 billion years ago
- C) 100,000 years ago
- D) 300 million years ago

TRUE/FALSE. Write "T" if the statement is true and "F" if the statement is false.

____ 16. During the 20th century, the mean global temperature has risen by about 0.6 degrees C.

____ 17. The tilt of the earth's axis varies between 22.1 and 30.5 degrees.

____ 18. The current shape of the earth's orbit around the Sun is elliptical.

____ 19. Positive feedback processes are self-limiting.

____ 20. Long-term climate change evidence is in reasonable agreement with predictions from the astronomical theory.