

Weather - Climate: Chapter 8 Review Questions

Short Answers

1. a) Define climate.
b) List three climate zones.
2. What are the similarities and differences between climate and weather?
3. What are the four main components of the climate system on Earth?
4. a) What is a greenhouse gas?
b) List some greenhouse gases.
5. a) What are some of the causes of long-term climate change?
b) What are some of the causes of short-term climate change?
6. Explain how the greenhouse effect works.
7. a) What is albedo?
b) What is the albedo effect?
8. a) What are proxy records?
b) How are they useful to climatologists?
c) How are tree rings used as proxy records?
9. Explain how clouds can be part of both positive and negative feedback loops.
10. Would a significant increase in carbon dioxide in the atmosphere have a positive or negative effect on the populations of polar bears and seals that live in the Arctic? Explain why.
11. Earth continuously absorbs energy from the Sun and yet Earth stays at a relative constant temperature. Explain how this occurs.

12. Climate system is defined as the complex set of components that interact with each other to produce Earth's climate. Write a definition of "climate system" in your own words.
13. How do volcanoes influence the climate?
14. The climate system transfers energy around the globe.
- a) Explain why energy transfer is important.
 - b) How is energy transferred in the atmosphere?
 - c) How is energy transferred in the oceans?
15. Describe one way in which each of the factors below affects the climate of a region.
- a) distance from a large body of water
 - b) prevailing winds
 - c) land formations

Multiple Choice

16. Which of the following series orders greenhouse gases from highest to lowest in effectiveness?
- a) nitrous oxide, methane, carbon dioxide
 - b) carbon dioxide, methane, nitrogen dioxide
 - c) carbon dioxide, methane, nitrous oxide
 - d) methane, carbon dioxide, nitrous oxide
17. Why is carbon dioxide considered a greenhouse gas?
- a) It destroys the ozone layer.
 - b) It traps radiation from Earth's surface.
 - c) It is relapsed by living things.
 - d) It is needed for photosynthesis.
18. Which of the following phrases best describes a bioclimate profile?
- a) a graph of the atmospheric conditions in a location over a short period of time
 - b) an average of the weather in a certain region over a long period of time
 - c) a series of graphs that show present and future climate at a given location
 - d) a climate zone based on landforms, soil, plants, and animals, as well as climate

19. A weather description states: “a high of 35°C today, sunny with cloudy periods, a 30% chance of precipitation, wind from the west at 25km/h, and relative humidity of 45%.” Which of the following describes the amount of water in the air in relation to the maximum amount that the air can possibly hold at that temperature?
- 30% chance of precipitation
 - wind from the west at 25km/h
 - relative humidity of 45%
 - a high of 35°C

True or False

- Land near an ocean or large lake tends to be cooler in the summer than inland locations at the same altitude.
- Earth absorbs more energy than is radiated by Earth.
- Scientists use proxy records to directly measure past temperatures.
- Convection currents form because warm air tends to rise and cold air tends to sink.

Fill in the blanks

- An ecoregion describes the _____ and ecology of a region in its current state.
- Climate is the average of the _____ in a region over a long period of time.
- Ice cores, tree rings, fossils and coral reefs are examples of _____.
- The greenhouse effect occurs when _____ absorb _____ emitted from Earth’s surface and radiate it, heating Earth’s surface and the atmosphere.

Match the words, on the left, with their definitions, on their right.

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| 28. | a) atmosphere | i) includes solid rock, soil and minerals of Earth’s crust |
| | b) hydrosphere | ii) layer of the atmosphere where ozone absorbs ultraviolet radiation |
| | c) stratosphere | iii) includes all water on and around earth |
| | d) lithosphere | iv) layers of gases surrounding Earth |
| | e) troposphere | v) layer of the atmosphere where ozone has a toxic effect |