

Chapter 20 – Review Questions

Read Chapter 20 and answer the following questions on a separate sheet of paper.

ANSWERS MUST BE HANDWRITTEN! Typed responses will not be accepted.

1. Summarize the story of how the eruption of Mt. Pinatubo was used by climate scientists to study global warming. What did those studies show about climate model projections?
2. Summarize briefly how the earth's average temperature has changed over the past 900,000 years and over the past 130 years. Distinguish between *glacial* and *interglacial* periods.
3. List five ways in which scientists get information about past changes in the earth's climate.
4. What is the earth's *natural greenhouse effect*? How widely is this theory accepted?
5. Describe the *natural cooling process* that takes place near the earth's surface. What are the four major greenhouse gases?
6. List three human activities that increase the input of greenhouse gases into the troposphere and could enhance the earth's natural greenhouse effect. What role does the United States play in greenhouse gas emissions?
7. List five signs that the troposphere is getting warmer.
8. Describe changes at the earth's poles and in Greenland and Alaska that indicate the troposphere has warmed in recent decades.
9. Describe how scientists develop mathematical models to make projections about future climate change.
10. What are three major findings of the 2001 report of the Intergovernmental Panel on Climate Change (IPCC)? According to the latest models, between 2000 and 2100 about how much increase is projected for the global average temperature? What is the scientific consensus about how these projected changes are related to human activities such as fossil fuel burning and deforestation?
11. How rapidly might climates shift? What are the implications for humans if climate shifts rapidly within a few decades?
12. Explain how each of the following factors might enhance or dampen global warming: (a) the ability of oceans to store CO₂ and heat, (b) changes in cloud cover, (c) air pollution, (d) the effects of increased CO₂ levels on photosynthesis, and (e) increased methane emissions.
13. Explain how atmospheric warming might affect each of the following: (a) glaciers, sea ice, and polar ice caps, (b) sea levels and coastal areas, (c) ocean currents and ocean water temperatures, (d) precipitation and weather, (e) biodiversity, (f) agriculture and fish stocks, and (g) people. List some of the beneficial effects of global warming for people and other forms of life in some areas.
14. Summarize the effects of atmospheric warming already taking place in Alaska
15. List five characteristics of global warming and climate change that make it hard to deal with the effects.

16. What are the two basic ways to deal with global warming? What are the two major schools of thought about what we should do to reduce its effects?
17. List ten prevention methods and seven cleanup methods which could help slow climate change from increased greenhouse gas emissions.
18. Describe the advantages and disadvantages of removing CO₂ from the atmosphere or smokestacks and storing it in (a) immature trees, (b) plants that store it in the soil, (c) deep underground reservoirs, and (d) the deep ocean.
19. List three approaches governments can use to reduce the threat of global warming.
20. What is the *Kyoto Protocol*? What are the advantages and disadvantages of this treaty? How could we move beyond the Kyoto treaty?
21. Describe what some countries, businesses, states, cities, individuals, and schools are doing to reduce their greenhouse gas emissions.
22. List ten ways you could reduce your emissions of greenhouse gases.
23. List eight ways in which we might prepare for and adjust to the harmful effects of global warming.
24. What is stratospheric *ozone depletion*, and how serious is this problem? What types of chemicals cause ozone depletion? How do these chemicals cause such depletion?
25. Explain how seasonal ozone thinning occurs each year over the earth's poles and what its effects are.
26. What are the major harmful effects of ozone depletion on (a) human health, (b) crop yields, (c) forest productivity, (d) wildlife, (e) air pollution, (f) materials such as plastics and paints, and (g) global warming?
27. Distinguish among *squamous cell skin cancer*, *basal cell skin cancer*, and *malignant melanoma*. List seven ways in which you can reduce your exposure to UV radiation.
28. If all ozone-depleting chemicals were banned now, about how long would it take for average concentrations of ozone in the stratosphere to return to levels that existed in (a) 1980 and (b) 1950?
29. Summarize the progress that has been made in reducing the threat of ozone depletion and explain the importance of such efforts.
30. List three factors that helped countries to agree to an international treaty to phase out ozone-depleting chemicals.