



Practice Midterm Exam

Raven, Berg, Hassenzahl: Environment, 7th Edition
Chapter 21: Global Climate Change

1. The Intergovernmental Panel on Climate Change (IPCC) projected a global temperature increase by the year 2100 of:
 - a) 0° to 1.5°C.
 - b) 1.8° to 4.0°C.
 - c) 3° to 5.5°C.
 - d) 3.5° to 10.4°C.
 - e) none, they didn't actually make such a prediction

Ans: b

Difficulty: Easy

Response:

Introduction to Climate Change; 21.1

2. Which of the following is not a greenhouse gas?
 - a) carbon dioxide
 - b) methane
 - c) chlorofluorocarbons
 - d) sulfur oxide
 - e) all of these are greenhouse gases

Ans: d

Difficulty: Easy

Response:

The Causes of Global Climate Change; 21.1.1

3. Which of the following activities is responsible for the largest percentage of human-made carbon dioxide emissions?
 - a) burning fossil fuels
 - b) deforestation
 - c) ozone depletion
 - d) acid deposition
 - e) agriculture

Ans: a

Difficulty: Easy

Response:

The Causes of Global Climate Change; 21.1.1



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4. Land conversion, such as when tropical forests are logged or burned, releases what substance(s) into the air?
- a) carbon dioxide
 - b) methane
 - c) nitrous oxide
 - d) chlorofluorocarbons
 - e) sulfuric acid

Ans: a

Difficulty: Easy

Response:

The Causes of Global Climate Change; 21.1.1

5. The group of air pollutants that tend to cool the atmosphere are known collectively as:
- a) CFCs
 - b) ozone enhancers
 - c) nitrous oxides
 - d) atmospheric aerosols
 - e) anti-greenhouse gases

Ans: d

Difficulty: Easy

Response:

Pollutants that Cool the Atmosphere; 21.1.2

6. Which of the following organisms have already been negatively affected by global climate change?
- a) Mediterranean fruit flies
 - b) tropical forests in Brazil
 - c) crop plants in the Midwest
 - d) zooplankton along the California coast
 - e) nematodes in the soil

Ans: d

Difficulty: Easy

Response:

Effects on Organisms; 21.2.4

7. Global climate change may actually benefit:
- a) humans
 - b) certain weeds
 - c) agriculture
 - d) most plants
 - e) aquatic animals

Ans: b

Difficulty: Easy

Response:

Effects on Organisms; 21.2.4



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8. Which of the following is the chemical formula for ozone?

- a) NO_3
- b) SO_3
- c) O_2
- d) CO_2
- e) O_3

Ans: e

Difficulty: Easy

Response:

The Causes of Global Climate Change; 21.1.1

9. Which of the following are accumulating in the atmosphere as a result of human activities?

- a) tropospheric ozone
- b) chlorofluorocarbons
- c) carbon dioxide
- d) all of these
- e) chlorofluorocarbons and carbon dioxide

Ans: d

Difficulty: Easy

Response:

The Causes Global Climate Change; 21.1.1

10. Gases that absorb infrared radiation include all of the following except:

- a) carbon dioxide
- b) methane
- c) nitrous oxide
- d) sulfur oxide
- e) tropospheric ozone

Ans: d

Difficulty: Easy

Response:

The Causes of Global Climate Change; 21.1.1

11. A situation in which a change in some conditions triggers a response that counteracts, or reverses, the changed condition is called:

- a) the second law of thermodynamics
- b) positive feedback
- c) negative feedback
- d) thermoregulation
- e) the Gaia hypothesis

Ans: c

Difficulty: Easy

Response:

Developing and Using Climate Models; 21.1.3



Practice Midterm Exam

12. Permafrost has traditionally been found in;
- a) Bangladesh and Pakistan
 - b) Tuvalu and the Maldives
 - c) Peru and Montana
 - d) Canada and Alaska
 - e) Greenland and Antarctica

Ans: d

Difficulty: Easy

Response:

Case in Point: Impacts in Fragile Areas; 21.2.2

13. The international treaty which provides operational rules on reducing greenhouse gas emissions is called:
- a) Kyoto Protocol
 - b) Montreal Protocol
 - c) IPCC Protocol
 - d) Mount Pinatubo Protocol
 - e) The enhanced greenhouse effect

Ans: a

Difficulty: Easy

Response:

International Efforts to Reduce Greenhouse Gas Emissions; 21.3.3

14. The atmospheric cooling that occurs where, and when, aerosol pollution is the greatest is an example of:
- a) positive feedback
 - b) the aerosol effect
 - c) equilibrium instability
 - d) carbon management
 - e) adaptation

Ans: b

Difficulty: Easy

Response:

Pollutants that Cool the Atmosphere; 21.1.2

15. In California, major wildfires have been increasing since the mid-1980's. Climate change is believed to play a role in this increase by its effects on:
- a) prevailing wind patterns
 - b) timing of snowmelt
 - c) reduction in annual precipitation
 - d) all of these
 - e) timing of snowmelt and reduction in annual precipitation only

Ans: b

Difficulty: Easy

Response:

Melting Ice and Rising Sea Levels; 21.2.1



Practice Midterm Exam

16. The Earth's average temperature is based on daily measurements taken from all of the following except:
- a) orbiting satellites
 - b) weather balloons
 - c) spectrophotometers
 - d) sea-surface buoys
 - e) transoceanic ships

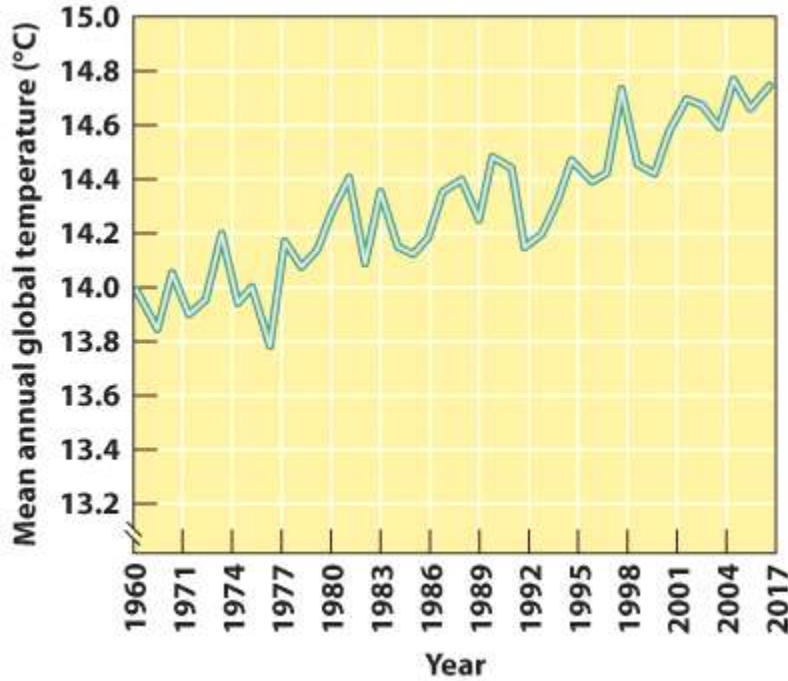
Ans: c

Difficulty: Medium

Response:

Introduction to Climate Change; 21.1

17. Based on the data in the accompanying figure, the year with the highest average global temperatures on record to date was:



- a) 1960
- b) 1975
- c) 1985
- d) 1998
- e) 2000

Ans: d

Difficulty: Medium

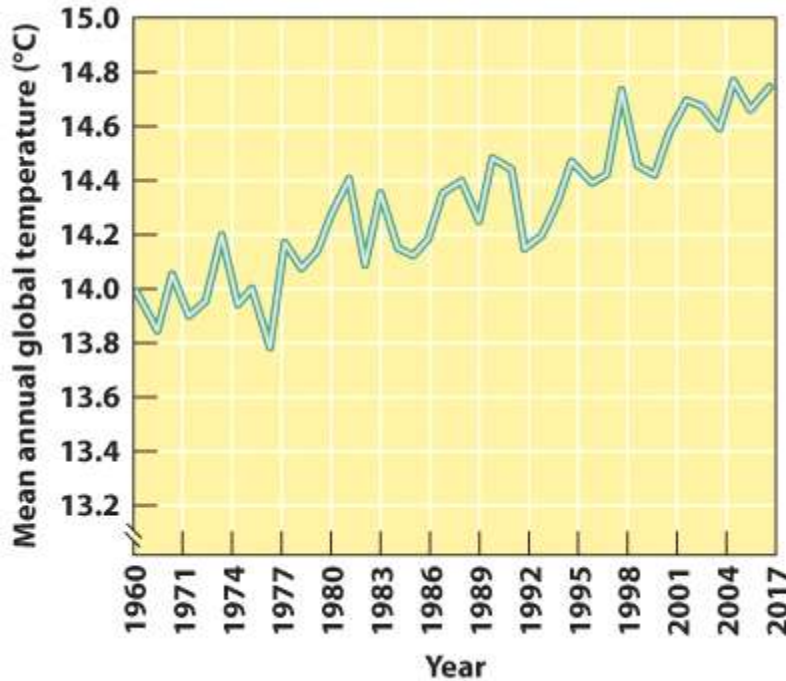
Response:

Introduction to Climate Change; 21.1



Practice Midterm Exam

18. Based on the data in the accompanying figure, which of the following years had the lowest average global temperature?



- a) 1965.
- b) 1971.
- c) 1976.
- d) 1992.
- e) 1996.

Ans: c

Difficulty: Medium

Response:

Introduction to Climate Change; 21.1

19. Studies documenting the arrival of spring and fall in the Northern Hemisphere are based on:

- a) average daily temperatures as measured at locations throughout Northern Hemisphere
- b) fixed calendar dates that have been consistent for the past 150 years
- c) when buds of particular plants open and when the leaves of particular plants change color and fall
- d) average snow melt, precipitation, and consistently increasing or decreasing temperatures across the state
- e) the amount of pollution, particularly greenhouse gases, found in the atmosphere of that region

Ans: c

Difficulty: Medium

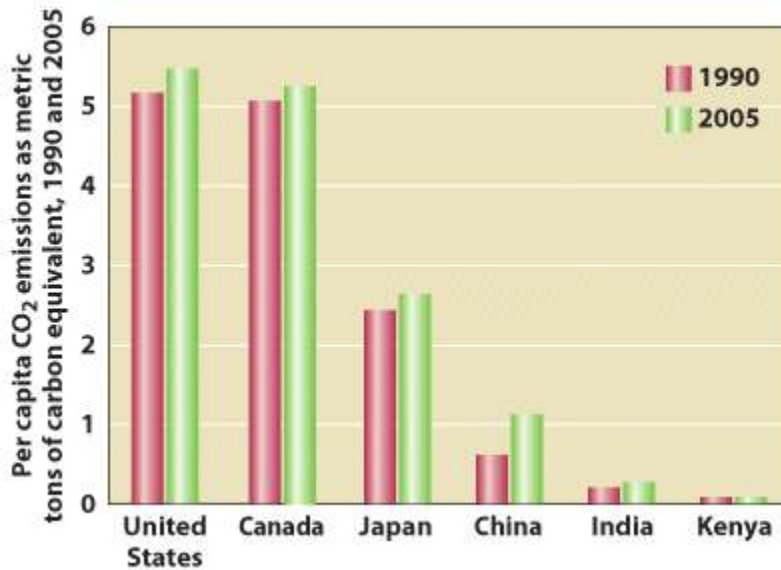
Response:

Introduction to Climate Change; 21.1



Practice Midterm Exam

20. Based on the graph below, the developing country with the highest per-capita CO₂ emissions is:



- a) China
- b) Germany
- c) Nigeria
- d) India
- e) Japan

Ans: a

Difficulty: Medium

Response:

International Implications of Global Climate Change; 21.2.7

21. The greenhouse effect occurs because:

- a) greenhouse gases released interact chemically to produce excess heat
- b) there are too many greenhouses scattered across the Earth's surface
- c) carbon dioxide and other trace gases trap infrared radiation in the Earth's atmosphere
- d) sulfur emissions from smokestacks and volcanoes continue to occur
- e) the gases produced by human activities allow significantly more heat to pass out of the Earth's atmosphere

Ans: c

Difficulty: Medium

Response:

The Causes of Global Climate Change; 21.1.1



Practice Midterm Exam

22. Which of the following statements about sulfur emissions is *false*?
- a) Both natural processes and human activities produce sulfur emissions.
 - b) Sulfur emissions are concentrated in heavily populated industrial areas, primarily in the Northern Hemisphere.
 - c) Sulfur haze only cools the planet during the daytime, while greenhouse gases warm the planet 24 hours a day.
 - d) Most countries are trying to reduce their sulfur emissions because of the negative impact of acid deposition.
 - e) Sulfur emissions remain in the atmosphere for hundreds of years and cause global cooling.

Ans: e

Difficulty: Medium

Response:

Pollutants that Cool the Atmosphere; 21.1.2

23. Which of the following is *not* a predicted outcome of global climate change?
- a) higher global temperatures
 - b) more extreme weather patterns
 - c) extinction of some organisms
 - d) rising sea levels
 - e) ocean water becomes alkaline

Ans: e

Difficulty: Medium

Response:

Effects on Organisms; 21.2.4

24. Major thawing of glaciers and the polar ice caps:
- a) is occurring as the result of excess aerosols in the atmosphere
 - b) will only impact those few people that live within 150 km of a coastline.]
 - c) will contribute to a rise in sea level because of thermal expansion of the warming ocean
 - d) will result in an estimated 150 cm increase in sea level by 2100, according to IPCC estimate
 - e) all of these

Ans: c

Difficulty: Medium

Response:

Melting Ice and Rising Sea Levels; 21.2.1

25. The potential impact of global climate change on the lifestyle of those people and animals living in Alaska and Northern Canada include all of the following except:
- a) changes in distribution and migration patterns of some wildlife species
 - b) collapse of roads and buildings with increased thawing of the permafrost
 - c) higher risk of contaminated water supplies
 - d) decreased agricultural productivity due to changing climate
 - e) a reduction in subsistence hunting due to reductions in wildlife habitat

Ans: d

Difficulty: Medium

Response:

Case in Point: Impacts in Fragile Areas; 21.2.2



Practice Midterm Exam

26. Which of the following statements about the effects of global warming on agriculture is true?
- a) Global climate change may decrease the frequency of droughts.
 - b) The warmer temperatures will result in increased soil moisture content in many agricultural soils.
 - c) Global climate change will result in a global increase in agricultural productivity.
 - d) Rising sea level may inundate some of the world's most productive agricultural lands.
 - e) Warmer temperatures associated with global climate change will probably help to control agricultural pests.

Ans: d

Difficulty: Medium

Response:

Effects on Agriculture; 21.2.6

27. The Kyoto Protocol:
- 1) has been signed and ratified by over 160 countries
 - 2) is an agreement to establish legally binding timetables to cut global emissions of greenhouse gases
 - 3) is an attempt to control global climate change by prohibiting all carbon dioxide emissions by 2050
 - 4) has been ratified by the U.S., resulting in voluntary reductions in industrial emissions
- a) 1
 - b) 2
 - c) 3
 - d) 4
 - e) Both 1 and 2

Ans: e

Difficulty: Medium

Response:

International Efforts to Reduce Greenhouse Gas Emissions; 21.3.3

28. If we stopped producing greenhouse gas emissions, the global temperature would:
- a) decrease immediately
 - b) decrease slowly
 - c) increase immediately
 - d) continue to increase for several years before decreasing
 - e) continue to increase for several decades before decreasing

Ans: e

Difficulty: Medium

Response:

Dealing with Global Climate Change; 21.3



Practice Midterm Exam

29. Chlorofluorocarbons are released into the atmosphere by:

- a) smoke stacks
- b) car exhaust
- c) leaking air conditioners and old refrigerators
- d) pesticides
- e) nuclear power plants

Ans: c

Difficulty: Medium

Response:

The Causes of Global Climate Change; 21.1.1

30. Which ozone-depleting chemical is not matched with its proper use?

- a) chlorofluorocarbons - pesticide
- b) halons - fire extinguishers
- c) methyl chloroform - industrial solvent
- d) carbon tetrachloride - industrial manufacturing
- e) methyl bromide - pesticide

Ans: a

Difficulty: Medium

Response:

The Causes of Global Climate Change; 21.1.1

31. Excessive exposure to UV radiation has been linked to:

- a) the greenhouse effect
- b) skin lesions
- c) deforestation
- d) declining aquatic plant populations
- e) weakened eggshells in birds

Ans: b

Difficulty: Medium

Response:

Links Among Global Climate Change, Ozone Depletion, and Acid Deposition; 21.2.8

32. Assuming the absence of air pollution control devices, which of the following is a major source of sulfur dioxide?

- a) refrigeration and air conditioning
- b) coal-burning power plants
- c) motor vehicles
- d) fertilizers
- e) fire retardants

Ans: b

Difficulty: Medium

Response:

Pollutants that Cool the Atmosphere; 21.1.2



Practice Midterm Exam

33. All of the following are probable results of global climate change *except*:
- a) more extreme weather patterns
 - b) extinction of some organisms
 - c) increases in sea level
 - d) higher global temperatures
 - e) an increase in acid rain

Ans: e

Difficulty: Medium

Response:

Melting Ice and Rising Sea Levels; 21.2.1; Changes in Precipitation Patterns; 21.2.3; Effects on Organisms; 21.2.4

34. Organisms that take CO₂ out of the air and sequester it in the form of calcium carbonate are:
- a) increasing in numbers because of the excess carbon dioxide in the atmosphere
 - b) effectively serving as a sink for carbon dioxide
 - c) being threatened by the increasing acidity of the oceans from carbonic acid
 - d) disappearing at an alarming rate as oceans become more alkaline
 - e) converting the calcium carbonate to sulfuric acid

Ans: c

Difficulty: Medium

Response:

Effects on Organisms; 21.2.4

35. Which of the following does *not* influence climate change?
- a) winds
 - b) clouds
 - c) albedo
 - d) ocean currents
 - e) none of these, all influence climate change

Ans: e

Difficulty: Easy

Response:

The Causes of Global Climate Change; 21.1.1

36. Which term describes the level carbon dioxide in the atmosphere before large scale use of fossil fuels began?
- a) negative feedback
 - b) preindustrial CO₂ level
 - c) post-fossil CO₂ level
 - d) emission scale
 - e) none of these

Ans: b

Difficulty: Easy

Response:

Developing and Using Climate Models; 21.1.3



Practice Midterm Exam

37. Which of the following is a “wedge” for reducing the buildup of CO₂?
- a) the decreased fuel economy of two billion cars
 - b) door jams
 - c) stopping all deforestation
 - d) removing carbon capture and storage at power plants
 - e) none of these

Ans: c

Difficulty: Easy

Response:

Chapter Opener; 21.0

38. Which of the following are two ways to attempt to manage global climate change?
- a) mitigation and conservation
 - b) adaptation and exploitation
 - c) reducing electricity and stopping cigarette smoke
 - d) mitigation and adaptation
 - e) none of these

Ans: d

Difficulty: Easy

Response:

Dealing with Climate Change; 21.3

39. Increased UV exposure has been linked to:
- a) the greenhouse effect
 - b) disruption of photosynthesis
 - c) deforestation
 - d) declining aquatic plant populations
 - e) weakened eggshells in birds

Ans: b

Difficulty: Medium

Response:

Links Among Global Climate Change, Ozone Depletion, and Acid Deposition; 21.2.8

40. Which of the following has the greatest effect on global climate change?
- a) CFCs
 - b) HCFCs
 - c) CO₂
 - d) O₃
 - e) H₂O

Ans: c

Difficulty: Easy

Response:

Chapter Opener; 21.0



Practice Midterm Exam

41. Which of the following is *not* true about the Intergovernmental Panel on Climate Change?
- a) it summarizes the current state of knowledge and uncertainty of global climate change
 - b) it provides the most definitive scientific statement about global climate change
 - c) it concludes that human-produced pollutants have caused minimal climate warming
 - d) it contains input and review from climate experts
 - e) none of these, all are true

Ans: c

Difficulty: Easy

Response:

Introduction to Climate Change; 21.1

42. Warmer temperatures leading to greater evaporation and higher concentration of atmospheric water vapor which leads to warmer air and ocean temperatures is an example of:
- a) negative feedback
 - b) infrared radiation
 - c) UV rays
 - d) greenhouse gasses
 - e) positive feedback

Ans: e

Difficulty: Easy

Response:

The Causes of Global Climate Change; 21.1.1

43. Which of the following does not cool the atmosphere?
- a) sooty aerosols
 - b) atmospheric aerosols
 - c) sulfur dioxide emissions
 - d) human-produced sulfur emissions
 - e) none of these

Ans: a

Difficulty: Easy

Response:

Pollutants that Cool the Atmosphere; 21.1.2

44. Which of the following is *not* a function of climate models?
- a) exploring and analyzing past climate events
 - b) exploring and analyzing future climate events
 - c) determine consequences of global warming on the biosphere
 - d) represent interactions among the atmosphere, ocean, and land
 - e) none of these, all are functions of climate models

Ans: e

Difficulty: Medium

Response:

Developing and Using Climate Models; 21.1.3



Practice Midterm Exam

45. Which of the following causes sea levels to rise?

- 1) expansion of water as it warms
 - 2) water is more reflective than ice
 - 3) retreat of glaciers
 - 4) ice absorbs more heat than water
- a) 1
 - b) 2
 - c) 3
 - d) 4
 - e) Both 1 and 3

Ans: e

Difficulty: Medium

Response:

Melting Ice and Rising Sea Levels; 21.2.1

46. Water shortages, frequent flooding, and heavy snow and rainstorms in some areas are a direct result of...

- a) melting ice caps
- b) changes in precipitation patterns
- c) rising sea levels
- d) agricultural byproducts
- e) none of these

Ans: b

Difficulty: Easy

Response:

Changes in Precipitation Patterns; 21.2.3

47. Which of the following effects on organisms is a result of climate warming?

- a) premature birth in mammals
- b) sterility
- c) early migration of aquatic species
- d) physical deformities
- e) increased cancer rates

Ans: c

Difficulty: Medium

Response:

Effects on Organisms; 21.2.4

48. Which of the following ecosystems are *not* considered at great risk of loss of species in the short term?

- a) polar seas
- b) coral reefs
- c) savannas
- d) temperate forests
- e) coastal wetlands

Ans: c

Difficulty: Medium

Response:

Effects on Organisms; 21.2.4



Practice Midterm Exam

49. Which of the following is *not* a harmful effect on human health resulting from climate change?

- a) malaria
- b) yellow fever
- c) heatstroke and heat-related illnesses
- d) respiratory problems
- e) schistosomiasis

Ans: d

Difficulty: Medium

Response:

Effects on Human Health; 21.2.5

50. Which of the following statements about climate change effecting agriculture is *false*?

- a) increased nighttime temperatures are beneficial for some crops
- b) increased nighttime temperatures are detrimental to some crops
- c) agricultural productivity will increase in some areas, and decrease in others
- d) subtropical regions will be able to increase their agricultural productivity in a warmer climate
- e) agricultural methods are now less reliant on CO₂-producing fossil fuels

Ans: d

Difficulty: Medium

Response:

Effects on Agriculture; 21.2.6