Answer Key

Directed Reading A

SECTION: WHAT IS CLIMATE?

1. A
2. climate
3. temperature and precipitation
4. distance north or south, measured in degrees, from the equator
5. The higher the latitude is, the colder the climate tends to be. Therefore, the temperatures at the poles are very low.
6. During June and July the Northern Hemisphere tilts toward the sun and receives more direct solar energy for a longer time. The Southern Hemisphere tilts away from the sun, so it has colder temperatures and shorter days.
7. prevailing winds
8. cools; precipitation
9. moist; dry
10. Dry prevailing winds can cause land near an ocean to be dry.
11. elevation
12. Mountains force air to rise. Air cools as it rises.
13. As air rises up a mountain, it cools. As it cools it releases moisture as precipitation, creating lush vegetation. After dry air crosses to the other side of the mountain, it sinks and warms up, holding moisture. So the land receives little precipitation.
14. Water absorbs and releases heat more slowly than land does. So it moderates temperatures of surrounding land.
15. surface currents
16. Warm water from the Gulf Stream flows past Iceland, heating the air and raising temperatures.
17. B
18. biome
19. There are several types of climates because of differences in geography and the amount of precipitation.

SECTION: THE TROPICS

1. A
2. tropical rain forest, tropical desert, tropical savanna
3. C
4. B
5. C
6. C
7. A
8. B
9. A
10. B
11. C
12. B
13. A
14. B
15. A
16. thin; nutrient poor; nutrient enriched; organic matter

SECTION: TEMPERATE AND POLAR ZONES

1. temperate zone
2. temperate forest, temperate grassland, chaparral, temperate desert
3. deciduous
4. evergreen
5. grasslands
6. It has adapted to fire.
7. low humidity and cloudless skies
8. B
9. A
10. D
11. A
12. C
13. D
14. B
15. C
16. polar zone
17. tundra
18. permafrost
19. The layer of soil above the permafrost is muddy because of poor drainage. This is a good breeding ground for insects, which birds feed on.
20. taiga
21. Conifers are evergreen needle-leaved trees.
22. Their needles and flexible branches allow them to shed heavy snow, so they are not damaged.

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23. Fallen needles from conifers make the soil acidic, which is not good for most plants.
24. B
25. B
26. A
27. B
28. A
29. A
30. microclimate
31. In winter, temperatures are below freezing. In summer, average temperatures are from 10°C to 15°C.
32. Answers may vary. Sample answer: A city, unlike a surrounding rural area, has more buildings and pavement that absorb solar radiation instead of reflecting it. This heats the surrounding air. Also, there is less vegetation in a city to take in the sun's rays.

SECTION: CHANGES IN CLIMATE

1. because it changes slowly
2. human activity and natural factors
3. ice age
4. glacial
5. because a large amount of water is frozen
6. interglacial
7. Milankovitch theory
8. When the orbit is more elliptical, Earth receives more energy from the sun. When the orbit is circular, Earth receives less energy from the sun.
9. Pangaea was when, 250 million years ago, all continents were connected near the South Pole in one giant landmass.
10. C
11. asteroid
12. The debris from a crashing asteroid's impact could have blocked sunlight, lowering air temperatures. Plants wouldn't get the sunlight they needed to grow, and animals therefore would have had no food.
13. During a solar maximum, the sun produces a large percentage of high-energy radiation. During a solar minimum the sun produces a low percentage of high-energy radiation.
14. It warms the winds, affecting climate patterns around the world.
15. temperature; carbon dioxide
16. greenhouse effect
17. It releases more carbon dioxide into the atmosphere since plants use carbon dioxide to make food.
18. Answers may vary. Sample answer: Icecaps will melt and cause flooding; deserts might receive even less rainfall than normal; crops would be harmed by warmer and drier climates.

Directed Reading B

SECTION: WHAT IS CLIMATE?

1. B
2. C
3. C
4. A
5. C
6. D
7. elevation
8. temperature; precipitation
9. windward
10. rain shadow
11. D
12. C
13. B
14. C
15. C
16. A
17. C
18. B
19. C
20. A

SECTION: THE TROPICS

1. B
2. B
3. B
4. D
5. C
6. D
7. B

SECTION: TEMPERATE AND POLAR ZONES

1. temperate zone
2. deciduous
3. evergreen
4. temperate grasslands
5. C
6. D
7. B
8. C

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