

Chapter 3 Review Questions

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

1. An *isotherm* on a map:
 - A) connects points of equal temperature.
 - B) represents the coldest place on the map.
 - C) represents the warmest place on the map.
 - D) identifies all places that have the same annual mean temperature.
2. The _____ is defined as the amount of temperature change per unit of distance.
 - A) range in temperature
 - B) temperature gradient
 - C) degree dissipation
 - D) isotherm
3. A place located along a windward coast:
 - A) will probably have summer temperatures that are very similar to an inland place at the same latitude.
 - B) will probably have warmer summer temperatures than an inland place at the same latitude.
 - C) will probably have cooler summer temperatures than an inland place at the same latitude.
4. Two cities are located at the same latitude (40 degrees). City A is in the Southern Hemisphere and City B is in the Northern Hemisphere. Assume the two cities reflect the general characteristics of the hemispheres where they are located. Which city should have the warmer winter temperatures.
 - A) City A
 - B) City B
 - C) Both cities should have nearly identical winter temperatures.
5. A small dumbbell-shaped index is part of the:
 - A) maximum thermometer.
 - B) bimetal strip.
 - C) thermistor.
 - D) minimum thermometer.
6. All of the following explain the difference between land and water temperature patterns EXCEPT:
 - A) land has a higher specific heat than water.
 - B) radiation does not penetrate as deeply in land as it does in water.
 - C) convective mixing helps distribute heat energy throughout a water body.
 - D) evaporative cooling is more common over water than over land.

7. The amount of heat needed to raise the temperature of 1 gram of a substance by 1 degree C is called:
- A) latent heat.
 - B) specific heat.
 - C) kinetic heat.
 - D) conductive heat.
8. What type of severe weather event killed up to 35,000 people in Europe during the summer of 2003?
- A) a heat wave
 - B) a drought
 - C) a tornado outbreak
 - D) a flood on the Elbe River
9. Why are average monthly temperatures cooler in Quito, Ecuador than Guayaquil, Ecuador?
- A) Quito is at a higher latitude.
 - B) Guayaquil is feeling the effects of global warming.
 - C) Glaciers in the Andes Mountains moderate the air temperature in Quito.
 - D) Quito is at a higher elevation.
10. The highest accepted temperature for the United States is 57 degrees C (134 degrees F) and was set at:
- A) Death Valley, California.
 - B) Dodge City, Kansas.
 - C) Salt Lake City, Utah.
 - D) Houston, Texas.
 - E) Key West, Florida.
11. On a particular day a place accumulates 15 heating degree days. What was the daily mean temperature on that day?
- A) 80 degrees F
 - B) 40 degrees F
 - C) 65 degrees F
 - D) 15 degrees F
 - E) 50 degrees F
12. The daily mean temperature in a particular place is 83. How many cooling-degree days were accumulated?
- A) 83 cooling degree days
 - B) 18 cooling degree days
 - C) 74 cooling degree days
 - D) 148 cooling degree days
13. Which of these factors influences the sensation of temperature that the human body feels?

- A) wind speed
 - B) air temperature
 - C) humidity
 - D) wind speed, air temperature, and humidity
14. The annual temperature range at most latitudes in the Southern Hemisphere is much smaller than that in the Northern Hemisphere. The reason for this is that:
- A) less area is covered by desert in the Southern Hemisphere.
 - B) there is a greater percentage of water surface in the Southern Hemisphere.
 - C) a greater proportion of the land surface is mountainous in the Southern Hemisphere.
 - D) rainfall and cloudiness are greater in the Southern Hemisphere.
 - E) the Earth is closest to the Sun during the Southern Hemisphere summer.
15. The _____ is often used in making a thermograph.
- A) maximum thermometer
 - B) thermistor
 - C) minimum thermometer
 - D) bimetal strip
 - E) wet bulb thermometer
16. How is the daily MEAN temperature affected by the presence of clouds?
- A) cooler
 - B) no conclusive effect
 - C) warmer during day, cooler at night
 - D) warmer
17. The minimum temperature usually occurs near sunrise because:
- A) atmospheric path is longest.
 - B) the Sun angle is lowest then.
 - C) reflection of solar radiation is a maximum.
 - D) Earth experiences a net loss of radiation until then.
18. The *specific heat* of water is high; what does this mean?
- A) Water will always be warmer than other materials for the same energy gain or loss.
 - B) Water has a high density.
 - C) Water must gain or lose large amounts of energy when its temperature changes.
 - D) Water can always serve as a source of heat.
19. Locations on Earth which have the largest annual temperature change from summer to winter are:
- A) near an ocean.
 - B) very humid.

- C) at the equator.
 - D) at high latitudes.
 - E) at low altitudes.
20. Overnight temperatures are warmer when the air is humid because:
- A) water vapor is a good absorber of outgoing longwave radiation.
 - B) water vapor is a good absorber of incoming shortwave radiation, causing more energy to be stored during the day.
 - C) water vapor and clouds cause the Earth system to have a higher nighttime albedo.
 - D) water vapor is good at scattering longwave radiation.