



PASSAGE III

A mercury thermometer, at an initial temperature of 20°C, was placed in 40°C water, and the temperature registered by the thermometer was recorded over time. This procedure was repeated using water samples at 50°C and 60°C (see Figure 1). Next, the same thermometer, at an initial temperature of 60°C, was placed in an air sample at 50°C, and the temperature registered by the thermometer was recorded over time. This procedure was repeated using air samples at 30°C and 40°C (see Figure 2).

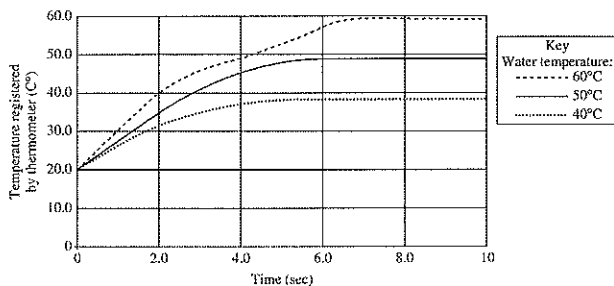


Figure 1

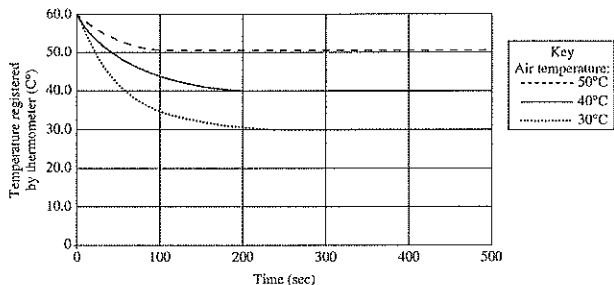


Figure 2

(Note: Assume that the temperatures of the water and air samples did not change during the measurements.)

11. Based on Figure 1, at 3.0 sec, the thermometer reading in the 40°C water most likely was closest to which of the following?
 - A. 47°C.
 - B. 42°C.
 - C. 36°C.
 - D. 31°C.

12. According to Figure 2, for an air temperature of 30°C, over which of the following time intervals was the thermometer reading changing most rapidly?
 - F. 0–100 sec.
 - G. 100–200 sec.
 - H. 200–300 sec.
 - J. 300–400 sec.

13. When the thermometer was in the 40°C water, in the time interval between 0 sec and 2 sec, approximately how rapidly, in °C/sec, was the temperature registered by the thermometer changing?
 - A. 1°C/sec.
 - B. 5°C/sec.
 - C. 10°C/sec.
 - D. 40°C/sec.

14. Based on Figure 2, if the thermometer, at an initial temperature of 60°C, had been placed in an air sample at 20°C, how long would it most likely have taken the thermometer reading to reach 20°C?
 - F. Less than 10 sec.
 - G. Between 10 and 50 sec.
 - H. Between 50 and 100 sec.
 - J. Greater than 100 sec.

15. According to the passage, at which of the following did the thermometer register the highest reading?
 - A. Water temperature 60°, 4.0 sec.
 - B. Water temperature 60°, 2.0 sec.
 - C. Water temperature 50°, 4.0 sec.
 - D. Water temperature 50°, 2.0 sec.