

### Passage III

Ice cream was made by stirring an ice cream mixture (M1) at a constant rate in the apparatus shown in Figure 1.

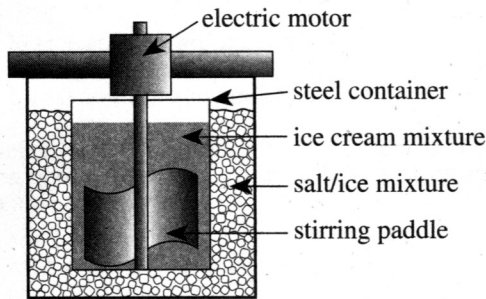


Figure 1

Figure 2 shows how the temperature of M1 and the temperature of the salt/ice mixture varied with mixing time.

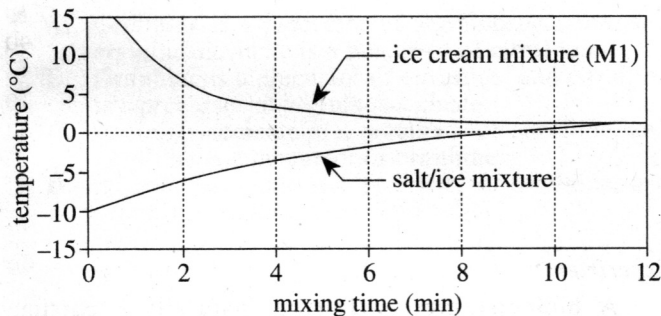


Figure 2

The *viscosity* (resistance to flow) of M1 was monitored by measuring how the current drawn by the motor turning the stirring paddle changed with mixing time. Two other ice cream mixtures (M2 and M3) were also monitored under conditions identical to those used during the mixing of M1 (see Figure 3).

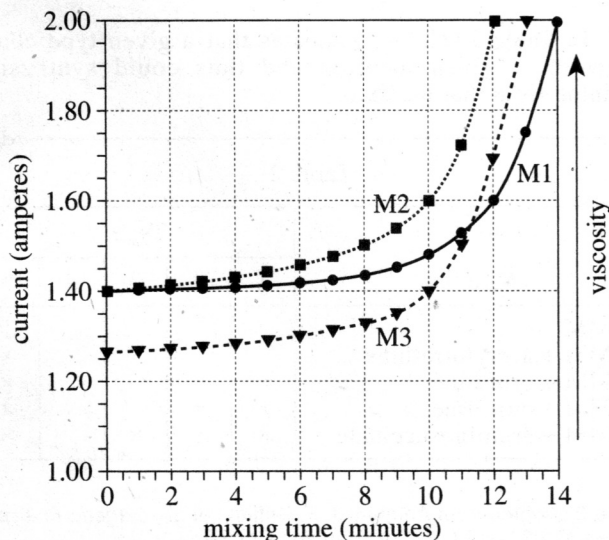


Figure 3

12. Based on Figures 2 and 3, for M1, as the temperature of the salt/ice mixture increased, the electrical current:
  - F. increased only.
  - G. decreased only.
  - H. increased, then decreased.
  - J. decreased, then increased.
  
13. A fourth ice cream mixture (M4) was monitored under the same conditions used to gather the data for Figure 3. The current at 0 min was 1.33 amperes. How did the initial viscosity of M4 compare with that of M1–M3? The initial viscosity of M4 was:
  - A. less than that of M1, M2, and M3.
  - B. less than that of M1 and M2, but greater than that of M3.
  - C. greater than that of M1 and M2, but less than that of M3.
  - D. greater than that of M1, M2, and M3.
  
14. According to Figure 3, the current drawn by the motor at a mixing time of 8 min for M2 was closest to which of the following?
  - F. 1.40 amperes
  - G. 1.45 amperes
  - H. 1.50 amperes
  - J. 1.55 amperes
  
15. Some ice cream makers automatically shut off when the current drawn by the electric motor reaches 2 amperes to indicate that the process is complete. Based on Figure 3, in this type of ice cream maker, which ice cream mixture, if any, would have the longest completion time?
  - A. M1
  - B. M2
  - C. M3
  - D. All 3 mixtures would have the same completion time.
  
16. Based on Figure 1, which of the following best explains the trends in the results shown in Figure 2? Overall, as mixing time increased, heat was conducted by the:
  - F. steel container from the ice cream mixture to the salt/ice mixture.
  - G. steel container from the salt/ice mixture to the ice cream mixture.
  - H. electric motor from the stirring paddle to the ice cream mixture.
  - J. electric motor from the ice cream mixture to the stirring paddle.