Standardized Test Prep

MULTIPLE CHOICE

1. What must be true about two given objects for energy to be transferred as heat between them?

A. The objects must be large.
B. The objects must be hot.
C. The objects must contain a large amount of energy.
D. The objects must have different temperatures.

2. A metal spoon is placed in one of two identical cups of hot coffee. Why does the cup with the spoon have a lower temperature after a few minutes?

F. Energy is removed from the coffee mostly by conduction through the spoon.
G. Energy is removed from the coffee mostly by convection through the spoon.
H. Energy is removed from the coffee mostly by radiation through the spoon.
J. The metal in the spoon has an extremely large specific heat capacity.

Use the passage below to answer questions 3–4.

The boiling point of liquid hydrogen is –252.87°C.

3. What is the value of this temperature on the Fahrenheit scale?

A. 20.28°F
B. –220.87°F
C. –423.2°F
D. 0°F

4. What is the value of this temperature in kelvins?

F. 273 K
G. 20.28 K
H. –423.2 K
J. 0 K

5. A cup of hot chocolate with a temperature of 40°C is placed inside a refrigerator at 5°C. An identical cup of hot chocolate at 90°C is placed on a table in a room at 25°C. A third identical cup of hot chocolate at 80°C is placed on an outdoor table, where the surrounding air has a temperature of 0°C. For which of the three cups has the most energy been transferred as heat when equilibrium has been reached?

A. The first cup has the largest energy transfer.
B. The second cup has the largest energy transfer.
C. The third cup has the largest energy transfer.
D. The same amount of energy is transferred as heat for all three cups.

6. What data are required in order to determine the specific heat capacity of an unknown substance by means of calorimetry?

F. $c_{p,water}$, T_{water}, $T_{substance}$, T_{final}, V_{water}, $V_{substance}$
G. $c_{p,substance}$, T_{water}, $T_{substance}$, T_{final}, m_{water}, $m_{substance}$
H. $c_{p,water}$, $T_{substance}$, m_{water}, $m_{substance}$
J. $c_{p,water}$, T_{water}, $T_{substance}$, T_{final}, m_{water}, $m_{substance}$

7. During a cold spell, Florida orange growers often spray a mist of water over their trees during the night. Why is this done?

A. The large latent heat of vaporization for water keeps the trees from freezing.
B. The large latent heat of fusion for water prevents it and thus the trees from freezing.
C. The small latent heat of fusion for water prevents the water and thus the trees from freezing.
D. The small heat capacity of water makes the water a good insulator.