Concept Items

11.1 Temperature and Thermal Energy 1.

A glass of water has a temperature of 31 degrees Celsius. What state of matter is it in?

a. solid
b. liquid
c. gas
d. plasma

2.

What is the difference between thermal energy and internal energy?

a. The thermal energy of the system is the average kinetic energy of the system's constituent particles due to their motion. The total internal energy of the system is the sum of the kinetic energies and the potential energies of its constituent particles.
b. The thermal energy of the system is the average potential energy of the system's constituent particles due to their motion. The total internal energy of the system is the sum of the kinetic energies and the potential energies of its constituent particles.
c. The thermal energy of the system is the average kinetic energy of the system's constituent particles due to their motion. The total internal energy of the system is the sum of the kinetic energies of its constituent particles.
d. The thermal energy of the system is the average potential energy of the systems' constituent particles due to their motion. The total internal energy of the system is the sum of the kinetic energies of its constituent particles.

3.

What does the Celsius scale use as a reference point?

a. The boiling point of mercury
b. The boiling point of wax
c. The freezing point of water
d. The freezing point of wax

11.2 Heat, Specific Heat, and Heat Transfer 4.

What are the SI units of specific heat?

a. \text{J/kg}^2 \cdot {}^\circ\text{C}
b. \text{J}\cdot \text{kg}^2/^\circ\text{C}
c. \text{J} \cdot \text{kg}/{}^{\circ}\text{C}
d. \text{J/kg} \cdot ^\circ\text{C}

5.

What is radiation?

a. The transfer of energy through emission and absorption of the electromagnetic waves is known as radiation.
b. The transfer of energy without any direct physical contact between any two substances.
c. The transfer of energy through direct physical contact between any two substances.
d. The transfer of energy by means of the motion of fluids at different temperatures and with different densities.

11.3 Phase Change and Latent Heat 6.

Why is there no change in temperature during a phase change, even if energy is absorbed by the system?

a. The energy is used to break bonds between particles and so does not increase the potential energy of the system's particles.
b. The energy is used to break bonds between particles and so increases the potential energy of the system's particles.
c. The energy is used to break bonds between particles and so does not increase the kinetic energy of the system's particles.
d. The energy is used to break bonds between particles and so increases the kinetic energy of the system's particles.

7.

In which two phases of matter do atoms and molecules have the most distance between them?

a. gas and solid
b. gas and liquid
c. gas and plasma
d. liquid and plasma