

## Quiz 6

1) Gas in a constant-volume gas thermometer registers a pressure of 95.0 kPa at 100°C. Assuming ideal behavior, what is the temperature of this gas when the pressure is 190 kPa?

- A) 546°C
- B) 527°C
- C) 491°C
- D) 473°C

Answer: D

2) The coefficient of linear expansion of steel is  $12 \times 10^{-6} \text{ K}^{-1}$ . What is the change in length of a 25-m steel bridge span when it undergoes a temperature change of 40 K?

- A) 1.2 cm
- B) 1.4 cm
- C) 1.6 cm
- D) 1.8 cm

Answer: A

3) How much heat is required to raise the temperature of a 225-g lead ball from 15.0°C to 25.0°C? The specific heat of lead is 128 J/(kgXK).

- A) 725 J
- B) 145 J
- C) 217 J
- D) 288 J

Answer: D

4) A 400-g piece of metal at 130°C is dropped into a cup containing 450 g of water at 15.0°C. The final temperature of the system is 40.0°C. What is the specific heat of the metal, assuming no heat is exchanged with the surroundings or the cup?

- A) 1310 J/(kgXK)
- B) 2830 J/(kgXK)
- C) 3420 J/(kgXK)
- D) 3780 J/(kgXK)

Answer: A

5) When you walk barefoot in a room, the floor feels cooler walking on a tile floor as compared to a wooden floor because

- A) tile has a smaller specific heat than wood.
- B) tile has a larger specific heat than wood.
- C) tile has a smaller thermal conductivity than wood.
- D) tile has a larger thermal conductivity than wood.

Answer: D

6) A gas expands at constant temperature from an initial volume of 0.040 m<sup>3</sup> and an initial pressure of 210 kPa until its pressure drops to 135 kPa. How much work is done by the system?

- A) 3.7 kJ
- B) 4.1 kJ
- C) 5.6 kJ
- D) 7.9 kJ

Answer: A

7) When a gas expands adiabatically,

- A) the internal energy of the gas decreases.
- B) the internal energy of the gas increases.
- C) there is no work done by the gas.
- D) work is done on the gas.

Answer: A