

Phys 10154 - Fall 2006 - Exam #10B

Be sure to answer with the proper units and significant figures. Indicate your answers clearly with boxes. **SHOW ALL WORK.** Even if your answer is correct, I will deduct points if I can't see how you solved the problem. Both problems are worth 50 points.

#1. The density of a gas at 85°C and 2.0 atm is 0.42 kg/m^3 . If this same amount of gas is changed to a new pressure and temperature of 25°C and 1.0 atm , what is the new density of the gas?

#2. 95 grams of steam at a temperature of 130°C is added to an aluminum pot of water at 22°C . The pot is 140 grams, and the amount of water in the pot is 220 grams.

Determine the final temperature of the system. If the final temperature is 100°C , calculate the amount of steam that condenses into water.

The specific heat of ice is $2090\text{ J/kg}\cdot\text{C}$

The specific heat of water is $4186\text{ J/kg}\cdot\text{C}$

The specific heat of aluminum is $900\text{ J/kg}\cdot\text{C}$

The latent heat of fusion for water is $3.33 \times 10^5\text{ J/kg}$

The latent heat of vaporization for water is $2.26 \times 10^6\text{ J/kg}$