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General Physics-I, Quiz 6
PHYS1000AA, Fall Semester-103
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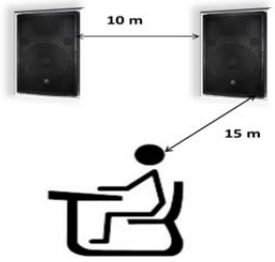
St. ID:_____ Name:_____

Chapter 18-20, Serway; ANY TYPES OF CHEATING WILL MAKE YOU FAIL!
Please write down the answers on the blank space or on the back of this paper. Answer should be in english. [ ] indicates the question points.

1. Suppose in your classroom, there are two loudspeakers placed on the right wall 10 m apart. You are listening sound at 15 m distance directly from one of the speakers. A single oscillator is driving the speakers at a frequency of 350 Hz. (a) What is the phase difference between the two waves when they reach to you? (b) What is the frequency closest to 350 Hz to which the oscillator may be adjusted such that you hear minimal sound? (The sound velocity is 343 m/s) [20 +10 = 30]



2. Let you are driving car and unfortunately one of the tire of the car has been punctured. After repairing let the mechanic inflated the tire with air originally at 10°C and normal atmospheric pressure. During the process, the air is compressed to 30.0% of its original volume and the temperature is increased to 40 °C. (a) What is the tire pressure? (b) After the car is driven at high speed, let the tire air temperature rises to 85°C and the interior volume of the tire increases by 2%. What will be the new tire pressure ? [20+15 = 35]

3. (a) Write down the first law of thermodynamics with mathematical representation (equation). What law does it follow? (b) What do you mean by Latent heat? Suppose you are having a ice cream of -10°C temperature. If you want to make this ice cream 25°C water inside your mouth, how much heat energy is needed. Let the ice ream mass is 50 g. (Specific heat for ice melting C = 2100 J/kg °C , Latent heat of fusion $L_f = 3.3 \times 10^5$ J/kg and Specific heat of water, S = 4200 J/kg-°C) [10 + 25 = 35]