

October 19, 2004 – mini-Quiz #5 – 8.03

Your name . . . . .

Mark your recitation: R01 – R02 – R03 – R04 – R05

**Mark ALL correct answers; there may be more than one.**

**5 points**

During the lecture on musical instruments, I inhaled pure helium, and you could not recognize my voice anymore. The reason for this was that:

- the helium affected my vocal cords.
- I had a cold, and the helium caused an awful irritation in my throat.
- the speed of sound in helium is higher than in air.
- the speed of sound in helium is lower than in air.
- the resonance frequencies of my larynx/throat cavity changed because of the helium.
- the helium changed the speed of sound in the lecture hall.

**Mark ALL correct answers; there may be more than one.**

**5 points**

During the Exam Review, I hit a magnesium rod of length 122 cm at one end with a hammer while I held the rod firmly in the middle. The rod then produced predominantly one wonderful tone.

- This tone was the first harmonic of longitudinal standing waves in the rod.
- This tone was the first harmonic of transverse standing waves in the rod.
- The tone was the second harmonic because I held the rod firmly in the middle, and that suppresses the first harmonic.
- The rod started to resonate similar to air in a pipe, *closed at both ends*, except that the speed of sound in magnesium is different from that in air.
- The period of this tone was the roundtrip (distance 244 cm) travel time for the sound in the magnesium.
- The roundtrip travel time is completely irrelevant.