LING 2200 Midterm

Fall 2022

Name:

Student number:

You have the entire class period to complete this test. Please make all answers for multiple choice questions on the Scantron sheet provided. **Do not forget to fill in your name and number** on the Scantron sheet.

Please make all short answers (including your work) on *this* exam booklet.

Good luck!

1. Suppose you have a tube that's closed at one end. The frequency of the 4th resonance is 0.033kHz. Assuming that the speed of sound is 330m/s, what is the length of the tube in cm?

2. A leaf blower has just come out and you're thinking of getting it for your dad, who's obsessed with yard work. It's advertised as being the "quietest leaf blower on the market." You took your intensity meter to Lowe's and measured the floor model as having an intensity of 10 W/m2.
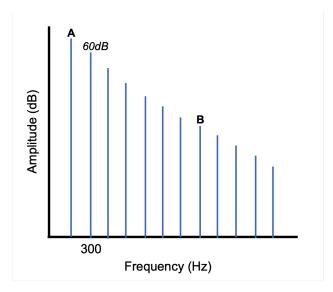
What is the dB reading of this leaf blower?

3. If we model the oral cavity as a tube open at both ends, what is the frequency (in kHz) of the 3rd harmonic for an oral cavity that is 9cm long? Assume the speed of sound is 330m/s.

4. At higher elevations, atmospheric pressure drops. As a result we would expect what? And why?

    a. Longer inhalations than at sea level because chest cavity can expand quickly

    b. Shorter inhalations than at sea level because lungs are used to greater atmospheric pressure

    c. Longer inhalation than at sea level because atmospheric pressure is equalized more quickly

    d. Shorter inhalations than at sea level because atmospheric pressure is equalized more quickly *

5. Assume that the amplitude of harmonics in the complex periodic spectrum decreases by 12dB per octave. In the glottal spectrum below, what are A and B?(Use correct units!)

A = 60dB, 300 Hz

B =

A =

B =

6. Compression occurs when

    a. Air molecules return to their equilibrium position
    b. Air molecules overshoot their equilibrium position
    c. Air molecules collide, creating an area of negative pressure
    d. Air molecules collide, creating an area of positive pressure

7. What is the frequency (F) and period (t) of a tuning fork vibrating at half a kilohertz?

8. The waveform below represents a complex periodic sound with three components. What is the frequency of third harmonic in Hz?

Time (s)