1) You decide to attend a rock concert without earplugs. You sit where the sound power level is 109 dB. How long until you have permanent hearing loss?

2) At the rock concert in (1), you decide to sit in the back where the sound power level is only 103 dB. How long until you have permanent hearing loss?

3) A doubled clamped spring style accelerometer consists of a Si proof mass (500µm thick and 1mm by 1mm) and a suspension system (2 rectangular beams, one on one side and one on the other side of the PM, 100µm long, 10µm wide and 5µm thick). For a Young's modulus of 190GPA and a density of 2.3g/cm^3, what is the sensitivity of the accelerometer?

4) For an accelerometer with a natural frequency of 1000Hz, what is the proof mass / frame relative displacement for a 10 G acceleration (1G = 9.8 m/s^2)?

5) What is the natural frequency (in Hz) for an accelerometer where a 10 G acceleration (1G = 9.8 m/s^2) results in a proof mass / frame relative displacement of 10µm?

6) For a(t) = 2u(t), what is Vout(t)?