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General Physics-I, Quiz 5
PHYS1000AA, AB, AC, Fall Semester-106
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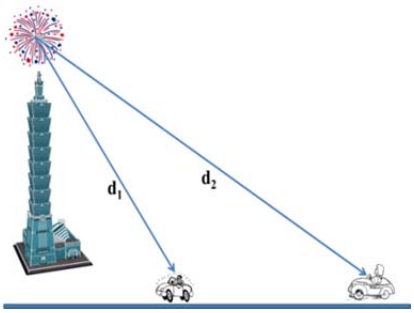
St. ID:_____, Name:_____

Chapter17-18, Serway; ABSOLUTELY NO CHEATING!
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.

Q1. Suppose a firework charge is detonated at the top of Taipei-101 as show in figure. Due to the explosion if the acoustic pressure is reached the maximum of $\Delta P_{max} = 20$ Pa at the distance of 1st person $d_1 = 1\text{x}10^3$ m from the explosion, what sound level will be experienced by the 2nd person at a distance of $d_2 = 4 \text{ x } 10^3$ m? Let the speed of sound is constant at 332 m/s throughout the atmosphere, the air absorption rate of sound energy = 10 dB/km, the density of air ρ=1.2 kg/m^3 and $I_0=10^{-12}$ w/m^2. [50]



Q2. Guzheng (古箏) is a popular Chinese traditional musical instrument. During playing Guzheng if you create two waves on one string which are expressed by the wave functions $Y_1 = 4\cos(4x - 1.5t + \phi)$ and $Y_2 = 5\sin(4x - 2t + \phi)$, what will be their superposition ($Y_1 + Y_2$) at the points (a) x = 1m, t = 1s, $\phi = 0$ and (b) x = 0.5m, t = 0s, $\phi = 0$. (c) What results are expected for (a) and (b) if you change the phase $\phi = 2\pi$, explain.
[20+20+10 = 50]