**Applied Acoustics - 25/10/2019 In-class test - Lecturer: Angelo Farina**

Note: some input date are based on the 6 digits of Matricula number, assigned to the 6 letters A B C D E F.

If for example the matricula is 123456, it means that A=1, B=2, C=3, etc. .

Furthermore CD=34 (NOT 3x4), DE =45, EF =56.

**Warning: On-line compilation of this form warrants TWO additional score points.**

Top of Form

**Surname and Name**

F

E

D

C

B

A

**Matricula**

**In free field the SPL reduces with the distance from a point source with a law of:** *one answer only, mandatory*

* 3 dB/ m
* 3 dB/ doubling distance
* 6 dB/ m
* 6 dB/ doubling distance
* It depends on the wind speed gradient and the temperature gradient

**In free field the SPL reduces with the distance from a line source with a law of:** *one answer only, mandatory*

* 3 dB/ m
* 3 dB/ doubling distance
* 6 dB/ m
* 6 dB/ doubling distance
* It depends on the wind speed gradient and the temperature gradient

**Select only the correct statements:** *multiple answers allowed*

* The human ears are basically sensors of the sound pressure
* The human ears are basically sensors of the particle velocity
* An omni microphone is a sensor of sound pressure
* An omni microphone is a sensor of particle velocity
* A cardioid microphone is a sensor of particle velocity
* A cardioid microphone is sensitive half to pressure, half to velocity

**When calibrating a sound level meter using a standard calibrator what do you expect to measure?** *multiple answers allowed*

* A sound pressure having an RMS value of 1.0 Pa at 1 kHz
* A sound pressure level of 94 dB
* A sound pressure level of 94 dB(A)
* A sound pressure level of 94 dB(C)
* A particle velocity level of 94 dB
* A sound intensity level of 94 dB

**A point source is located outdoors, over a reflecting plane. Measurements are made all around, at a distance of 10+F m, and the resulting average SPL is 80+E dB(A). Estimate the sound power level Lw of the sound source.**

*write number and measurement unit*

**The same source of previous exercise is placed inside a reverberant room, having a volume V=200+E\*10 m³ a surface of 200+F\*10 m² and an average absorption coefficient α = 0.2+D/100. Compute the average value of SPL inside the room, far from the source.**

*write number and measurement unit*

**If the source of previous exercise is placed on the reflecting floor inside the reverberant room, compute the SPL at the critical distance from the source.**

*write number and measurement unit*

**A machine produces an SPL of 90+F dB at 50+F\*10 Hz. Compute the A-weighted SPL**

*write number and measurement unit*

*Scores: +1 for each correct answer, -1 for each wrong answer, 0 for no answer*