**Applied Acoustics - 09/10/2015 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.

Top of Form

**Surname and Name**

F

E

D

C

B

A

**Matricula**

**Check the sentences you think are always TRUE**  (multiple answers allowed)

* The sound pressure level is always larger than the sound intensity level
* The values of the levels in dB of sound pressure, particle velocity, sound intensity and sound energy density are the same in case of a plane, progressive wave
* The ratio I/Dc is always smaller or equal than one
* The sound energy density level is always intermediate between sound pressure level and sound particle velocity level
* The sound speed in air is always onstant (340 m/s)
* The sound speed in air is proportional to the temperature
* The sound speed in air is proportional to the square root of temperature
* The sound speed depends on the sound level and frequency

**The sound power level of a source is increased by 6 dB. What does this mean?**  (multiple answers allowed)

* The acoustical power has been doubled
* The acoustical power has been increased by a factor of 4
* The sound pressure level at the receiver point will also increase by 6 dB
* The sound pressure at the receiver point doubles
* The sound pressure at the receiver point is increased by a factor 1.41

**According to ISO 226-2003, what is the SPL of a sound at 100 Hz which is perceived with the same loudness as a sound of 60 dB at 1000 Hz?**  (a single answer)

* 60 dB
* 65 dB
* 70 dB
* 75 dB
* 78 dB
* 80 dB

**What's the sound pressure corresponding to an SPL of 100+F dB ?** (write number and measurement unit)

**Compute the SPL corresponding to a sound pressure of 0.1+E/10 Pa** (write number and measurement unit)

**Compute the (incoherent) sum of the sound pressure level**

**of 80+E and 80+D dB**  (write number and measurement unit)

**The SPL of a fan is 88+F dB at 63 Hz. Compute the SPL in dB(A)**  (write number and measurement unit)

**A sound source is producing an SPL=50+F dB(A). A second sound source is switched on, and the total SPL becomes equal to = 63+D dB(A). Compute the SPL of the second source alone.** (write number and measurement unit)

**A plane progressive wave is propagating in air, with a SPL=80+E dB. Compute the values of sound pressure, particle velocity, sound intensity, sound energy density** (write number and measurement unit for p, v, I, D)