**Applied Acoustics - 22/12/2017 In-class test - Lecturer: Angelo Farina**

Note: some input data 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 EF=56 (NOT 5x6).

Top of Form

**Surname and Name
+ signature**

F

E

D

C

B

A

**Matricula**

**1) Compute the value of Leq at the end of a measurement, during which the SPL was 60+F dB(A) for 1+D hours and 65+E dB(A) for 2+C/3 hours**

*Write number and measurement unit – 5 points*

**2) Compute the SPL inside a room having a volume V=300+D\*20 m³, a reverberation time of 1+F/10s, where the receiver is at the critical distance from a point source having an Lw=90+E dB.**

*Write number and measurement unit – 5 points*

**3) Compute the total SPL in dB(A) of a pink spectrum in octave bands ranging between 31 Hz and 16 kHz (10 octave bands). The SPL in each octave band is 60+F dB.**

*Write number and measurement unit – 5 points*

**4) In a standing wave tube the values of pmax and pmin are respectively 1+F/10 Pa and 0.2+E/50 Pa. Compute the value of the apparent sound absorption coeff.  of the sample placed at the end of the tube.**

*Write number and measurement unit – 5 points*

**5) Check the sentences you think are TRUE**  *(multiple answers allowed – 3 points each)*

* 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 always equal
* The sound intensity level is always smaller or equal than the sound energy density level
* The sound energy density level is the energetic average between sound pressure level and sound particle velocity level
* The sound speed in air is constant (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

**6) What's the decay rate with distance for a point-like source ?**  *(one answer only – 4 points)*

* 3 dB / octave
* 6 dB / meter
* 6 dB / doubling distance
* 3 dB / doubling distance
* DL2 = 3 dB

**7) What's the decay rate with distance for a line source ?**  *(one answer only – 4 points)*

* 3 dB / octave
* 6 dB / meter
* 6 dB / doubling distance
* 3 dB / doubling distance
* DL2 = 3 dB