**Applied Acoustics - 18/12/2015 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) – A plane sound wave is impinging on a Soundfield microphone with incoming angles azimuth=30+F\*10 ° and elevation=15+E\*5 ° - compute the gain of channel X

*Write number*

2) – Compute the number of channels of a B-format signal of order N = 4+E.

*Write number*

3) – A cardioid microphone has unit gain in frontal direction. Compute the gain for a direction angled 45+F\*10 ° from frontal direction

*Write number*

4) Recompute the gain of the cardioid microphone of previous exercise, expressed in dB

*Write number and measurement unit*

5) Compute the total SPL in dB(A) of a pink spectrum in octave bands ranging between 31 Hz (where the unweighted SPL is 60+F dB) and 16 kHz (10 octave bands)

*Write number and measurement unit*

6) Compute the value of Leq at the end of a measurement, during which the SPL was increasing linearly from 60+F dB(A) to 70+E dB(A) during one hour

*Write number and measurement unit*

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

*Write number and measurement unit*

8) 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*

9) Compute the number of pyramids launched by the Ramsete program when Subdivison Level is set to 8+F:

*Write number and measurement unit*

10) A truck passage was recorded, with a total duration of 70+F s and an Leq = 65+E dB(A). Compute the value of the SEL value to be stored in the DISIA database

*Write number and measurement unit*