**Applied Acoustics - 04/12/2015 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**

F

E

D

C

B

A

**Matricula**

1) Compute the length in samples of the convolution of an anechoic signal of 30+F s with an impulse response of 2+E/10 s, at 48 kHz

2) A digital filter should emulate the reverb of a church, several second long. Which filtering technique provides less CPU load?

* FIR filtering in time domain
* Overlap-Save filtering in frequency domain
* Equally-Partitioned convolution
* Not-Equally-Partitioned convolution
* IIR filtering

3) A digital filter should emulate the reverb of a church, several second long. Which filtering technique provides less latency?

* FIR filtering in time domain
* Overlap-Save filtering in frequency domain
* Equally-Partitioned convolution
* Not-Equally-Partitioned convolution
* IIR filtering

4) In a standing wave tube, the ratio between maximum and minimum pressures is 5+F. Compute the sound absorption coefficient α of the sample according to ISO 10534.

*write number and measurement unit (with a space in between and no other spaces)*

5) In a standing wave tube, the ratio I/EDc is equal to 0.2+E/20. Compute the sound absorption coefficent α of the sample with the Sound Intensity method.

*write number and measurement unit (with a space in between and no other spaces)* 

6) An EN-1793-5 measurement is performed at 0° incidence angle with dsm=1+F/20 m and dm=0.2+E/100 m. The incident sound impulse has an SPL=90+F dB, and the absorption coefficient of the barrier is 0.3+D/20. Compute the SPL of reflected sound impulse.

*write number and measurement unit (with a space in between and no other spaces)*

7) Inside a reverberant room having V=250 m3 the value of T1 and T2, measured before and after inserting 10m2 of absorbing material, are respectively 4+F/10 and 2+E/10 s.

Compute the absorption coefficient of the absorbing material.