**Applied Acoustics - 24/10/2014 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 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**

**What's the relation between sound absorption coefficient a and apparent sound absorption coefficient α ?**

* They are the same *(one answer only)*
* α is always smaller than a
* α = 1 - r = a + t
* a = 1 - r = α + t
* α can be larger than one, a is always smaller than 1

**What's the definition of critical distance dcr ?** *(one answer only)*

* It is the distance at which the direct sound becomes negligible
* It is the distance where the direct sound equals the reverberant sound
* It is the cubic root of the room's volume
* It is a room property, it does not depend on source's directivity
* It is the distance where the semi-reverberant formula begins to be true

**What's the correct definition of reverberation time T?** *(one answer only)*

* The time after the source is switched off required for a sound decay down to the background floor
* The time after the source is switched off for a decay down to 60 dB
* The time required for the sound level to reach a value which is 60 dB smaller than the level prior of the source switch off.
* The reciprocal of the slope of the decay, expressed in dB/s
* The value predicted by the Sabine's formula

**The value of T20 is approximately equal to:** *(one answer only)*

* The same value as T60
* 1/3 of the value of T60
* 3 times the value of T60
* There is no general rule, it depends on the room's volume
* Always smaller than T60

**Compute the reverberation time in a room which measures (10+F)x(6+E)x(3+D) meters, where the floor has α=0.05, the walls have α=0.1 and the ceiling has α=0.4+C/40**

*write number and measurement unit*

**Compute the critical distance in the room of previous exercise, for a source with Q=2+F/5**

*write number and measurement unit*

**Compute the SPL at a distance of 5+f m from an omnidirectional source placed over the reflecting floor in the same room as the previous exercise**

*write number and measurement unit*

**An industrial building is 100m long, 50m wide, and the height is 4+F/3 m. The reverberation time is 3+E/5 s. The worker is at a distance of 3+D/10 m from an omnidirectional source, placed over the reflecting floor. Compute the difference between the real and the theoretical values of the environmental correction factor K2.**

*write number and measurement unit*