**Applied Acoustics - 07/11/2014 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).

**Warning: On-line compilation of this form warrants TWO additional score points.**

Top of Form

**Surname and Name
+ signature**

F

E

D

C

B

A

**Matricula**

1) In a large room only one significant reflection occurs in the first 80ms, the reverberant tail begins later. Compute the value of **C80** (clarity) knowing that the room has a reverberation time of 1+F/10 s, a volume of 2000+E\*100 m³, the distance of the receiver is 3+D/2 m, and the reflection is 3 dB weaker than the direct sound.

*(write number and measurement unit)*

2) In the case of the previous exercise, compute the value of **Jlf** (lateral fraction) knowing that the angle at which the reflection is arriving to the receiver is 30+F\*6 degrees

*(write number and measurement unit)*

3) In the case of the previous two exercises, compute the value of **G** (strength).

*(write number and measurement unit)*

4) In a noiseless classroom, the value of the **MTF** (Modulation Transfer Function) is equal to 0.5+F/20. Recompute the value of MTF when noise is added, with a Signal/Noise ratio of 5+E dB

*(write number and measurement unit)*

5) In a cubic room, with a side of 5+F/2 m and an average absorption coefficient **α**=0.1+D/100, a total of 100+EF sound absorbing panels is inserted, each of them has an equivalent absorption area **A** = 0.5+D/20 m². Compute the reverberant sound level reduction **DL** caused by the increase of sound absorption.

*(write number and measurement unit)*

6) An acoustic panel has a value of **a**=0.3+F/30 and of **t**=0.1. Compute the value of the apparent sound absorption coefficient **α**.

*(write number and measurement unit)*

7) Compute the value of **r** for the acoustic panel of previous exercise.

*(write number and measurement unit)*

8) A noise barrier has a value of **α**=0.3+E/20. Compute the attenuation of the reflected sound **DL** in dB (reflection loss).

*(write number and measurement unit)*

9) The volume of a reverberation room is **V**=200+EF m³. The reverberation time was initially **T1**=6+F/10 s, but reduces to **T2**=2+E/10 s after inserting a surface of 10 m² of absorbing material. Compute the value of **α** of this material.

*(write number and measurement unit)*

10) The volume of a reverberation room is **V**=200+EF m³. The reverberation time was initially **T1**=6+F/10 s, but reduces to **T2**=2+E/10 s after inserting 10+D seats. Compute the value of **A** of each seat.

*(write number and measurement unit)*