**Applied Acoustics - 27/11/2023 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 you do not have yet a matricula number use your date of birth: DDMMYY.

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.

Top of Form

**Surname and Name**

F

E

D

C

B

A

**Matricula Signature**

1. **Check the sentences you think are always TRUE** (multiple answers allowed)

* ISO354 measures Alpha Sabine, which is always larger than the true Alpha of a material
* A standing wave tube measures the true value of Alpha for normal incidence
* The impulsive method (EN 1793-5) does not measure the true value of Alpha nor Alpha Sabine.
* The sound intensity method can be used either inside a tube or in free field
* Calculations done with the Sabine formula require to use the true value of Alpha
* Simulations done with computer programs require to use the true value of Alpha
* The scattering coefficient s is always smaller than Alpha

1. **Check the sentences you think are always TRUE**  (multiple answers allowed)

* The absolute immission limits (LAq,day, LAeq,night) depend on the land’s zoning
* The differential immission limits are different for day and night
* The environmental noise level must be corrected for the presence of tonal components
* The environmental noise level must be corrected for the presence of impulsive components
* Lden is always larger than Lday for any noise profiles.
* Lnight measured according to the EN Directive is always equal or smaller than Lnight measured according to the old Italian law

1. **In a standing wave tube the value of the SWR is 3+F/4. Compute the apparent absorption coefficient, α, of the sample inserted in the tube.**(write number and measurement unit)
2. **In a standing wave tube the intensity/density ratio (I/Dc) is 0.2+F/20. Compute the apparent absorption coefficient, α, of the sample inserted in the tube.**(write number and measurement unit)

1. **A measurement according to EN 1793/5 is performed on a noise barrier, resulting in a reduction of the level of reflected noise, DLri, equal to 3+E/4 dB(A). Compute the average reflection index, RI, of the barrier**   
   (write number and measurement unit)
2. **A noise barrier creates an incremental path Delta of 0.5+F/10 m. The spectrum of the noise is flat (pink) between 125 Hz and 4 kHz. Compute the barrier attenuation in dB(A).**(write number and measurement unit)

1. **Compute the SEL for the following noise level profile:**

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(write number and measurement unit)