**Applied Acoustics - 20/11/2015 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 CD=34 (NOT 3x4).

Top of Form

**Surname and Name**

F

E

D

C

B

A

**Matricula**

1) The Sound Reduction Index R of a wall is 40+F dB. Compute the transmission coefficient t.

*write number and measurement unit*

2) Compute the areic mass **** of a wall which has a Sound Reduction Index R =40+E dB, at a frequency of 200+DE Hz

*write number and measurement unit*

3) In the hypothesis of validity of the Mass Law, and knowing that R=30+D dB at 200 Hz, compute the frequency at which R becomes equal to 40+E dB.

*write number and measurement unit*

4) Inside the room where the noise source is active a level L1=100+F dB is measured. The wall separating the neighborough’s room has a surface of 5+D m², and a sound reduction index R’=40+E dB. The equivalent absorption area A2 of the receiving room is 10+C m². Compute the level L2 in the receiving room.

*write number and measurement unit*

5) According to Italian Law (DPCM 5/12/1997) the vertical walls separating two different residential flats are subjected to the following passive acoustical requirements:

*one answer only*

* Sound Insulation Index D must be equal or greater than 50 dB
* Sound Reduction Index R must be equal or greater than 50 dB
* Apparent Sound Reduction Index R’ must be equal or greater than 50 dB
* Weighted sound reduction index Rw must be equal or greater than 50 dB
* Weighted apparent sound reduction index R’w must be equal or greater than 50 dB

6) When computing the weighted normalized tapping noise level L'nw, the ISO-717-2 curve must be:

*one answer only*

* pushed down at 1 dB step until the sum of unfavourable deviations becomes smaller than 32 dB
* pushed up at 1 dB step until the sum of unfavourable deviations becomes smaller than 32 dB
* placed at a point where the value of the reference curve equates the measured value at the frequency of 500 Hz
* moved up and down until the deviation between the reference curve and the measured curve is minimized
* kept at its standardized position, so that the difference between the measured values and the reference curve can be computed univocally

7) In Italian law on environmental noise the differential level is defined as

*one answer only*

* The difference between day equivalent level and night equivalent level
* The difference between the levels of the environmental noise (source on) and the residual noise (source off)
* The difference between the measured Leq and the zoning limit
* The difference between the levels of noise produced by a tapping machine and the background noise
* The difference between the levels produced by a specific source and the background noise level

8) A noise screen is designed for protecting a residential house in a class-II area. The measured values are Leq,day = 52+F dB(A), Leq,night = 47+E dB(A). What’s the attenuation L required by the barrier?

*write number and measurement unit*

9) After 24h of ambient noise monitoring, the following values are found: Lday=60+F dB(A), Levening=50+E dB(A), Lnight=50+D dB(A). Compute Lden

*write number and measurement unit*