**Applied Acoustics - 14/11/2014 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) The transmission coefficient t of a wall is 0.01+F/100. Compute the value of Sound Reduction Index R.

*write number and measurement unit*

2) Compute the sound reduction index R for a wall which obeys to the Mass' Law, weighting 200+EF kg/m², at a frequency of 200+DE Hz

*write number and measurement unit*

3) Find the coincidence frequency for a glass plate, having a thickness of 10+F mm

*write number and measurement unit*

4) Compute the sound insulation D between two rooms, separated by a wall having a value of R=40+F dB, with a surface S=10+E m². The receiving room has a volume V=100+CD m³ and a reverberation time of 0.5+E/10 s.

*write number and measurement unit*

5) An ISO-140-4 test is performed between two rooms. The measured SPL values are respectively L1=100+F dB and L2=50+E dB. The wall separating the two rooms has a surface of 5+D m², and the equivalent absorption area of the receiving room is 10+C m². Compute the value of sound reduction index R.

*write number and measurement unit*

6) According to Italian Law (DPCM 5/12/1997) the apparent sound reduction index R'w of internal partitions must be verified for:

*one answer only*

* every internal vertical or horizontal partition of a building
* for every internal vertical partition of a building, but not for horizontal partitions
* only for internal vertical or horizontal partitions which separate two independent apartments
* only for internal vertical partitions which separate two apartments
* only for internal horizontal partitions which separate two apartments

7) 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

8) 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*

9) The value of Lnight measured at a distance of 25m from the road center is 65+F dB(A). Compute the distance at which it is lawful to build an house in an area of class 1+int(E/2).

*write number and measurement unit*

10) An house is at short distance of a railway, where 100+EF trains are passing during each night. The noise limit is exceed by 5+E/2 dB. Compute the maximum number of trains allowed to pass without exceeding the noise limit.

*write number and measurement unit*