**Applied Acoustics - 24/11/2017 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) Compute the value of **T20** in a room having a volume **V** = 400+F\*20 m3 a total internal surface **S** =300+E\*20 m2 and an average absorption coeff. α= 0.1+D/20.

*(write number and measurement unit)*

2) In a room having a value of **T20**=4+F/10 s the SPL was too large. So a proper amount of absorbing material is installed, for getting an SPL reduction of the reverberant field of 5 dB. Compute the new value of reverberation time after the room has been treated.

*(write number and measurement unit)*

3) An acoustic panel has a value of **r** =0.2+F/30 and of **t**=0.1. Compute the value of the apparent sound absorption coefficient ****.

*(write number and measurement unit)*

4) Compute the value of the sound absorption coefficient **a** for the acoustic panel of previous exercise.

*(write number and measurement unit)*

5) In an outdoor theatre, there is only one significant sound reflection, occurring 30+F ms after the direct sound, with an amplitude smaller than the direct sound by 3+E/10 dB. Compute the value of center time ts.

*(write number and measurement unit)*

6) What is the definition of Clarity C80 ? (one answer only)

* The ratio between the Early energy (0-80ms) and the Late energy (80ms-infinite)
* 10 times the logarithm of the ratio between the Early energy (0-80ms) and the Late energy (80ms-infinite)
* 20 times the logarithm of the ratio between the Early energy (0-80ms) and the Late energy (80ms-infinite)
* 10 times the logarithm of the ratio between the Early energy (0-80ms) and the total energy (0ms-infinite)
* 20 times the logarithm of the ratio between the Early energy (0-80ms) and the total energy (0ms-infinite)

7) What is the definition of IACC? (one answer only)

* The correlation between the signals at the two ears
* The normalised cross-correlation between the signals at the two ears
* The maximum value of the normalised cross-correlation function between the signals at the two ears
* The maximum value of the normalised cross-correlation function between the signals at the two ears occurring inside the window of +/- 1 ms
* It is equal to 1 - LF

8) What is the definition of STI? (one answer only)

* It is the average value of the modulation transfer function
* It is the weighted average value of the modulation transfer function, using different weights for male and female speakers
* It is the weighted average value of the octave-bands value of STI, each of them being the average of the MTF values for different modulation frequencies in that octave band
* Each value of the MTF matrix is first converted into an equivalent S/N ratio, which is capped to +/-15 dB. These values are converted back to STI values, which are averaged for each carrier octave band. The resulting STI values are combined with a weighted average, with different weights for males and females
* It is the percentage of correct words being written in a dictation test.