# **Applied Acoustics – exam of 20/02/2015**

Surname & name:

D

A

F

E

C

B

Matricula: Degree:

**Exercise 1 (tolerance +/- 0.5 dB)**

Two loudspeakers emit uncorrelated broadband noise. The receiver is at a distance of 10 m from the first one, and 11+F m from the second one, in free field. The acoustical power of each loudspeaker is 0.1 W.

Compute:

Lp1 of first loudspeaker dB (5 points)

Lp2 of second loudspeaker dB (5 points)

Lpmax when both loudspeakers operate simultaneously dB (5 points)

**Exercise 2 (tolerance +/- 0.5 dB, +/- 5%)**

A reverberant room with a volume V=200+EF m³ has a reverberation time T20,1 = 6+F/10 s. A surface S of absorbing material is inserted, causing the reverberation time to reduce to T20,2 = 2+D/10 s. Knowing that the absorption coefficient Sabine of the material being introduced is equal to 0.65, compute the surface S of the material and the reduction of the reverberant sound pressure level caused by the baffles.

Surface S m2 (5 points)

Reduction of reverberant level dB (5 points)

**Exercise 3 (tolerance +/- 0.5 dB)**

6) A brick wall is separating two rooms. The wall has a surface of 10+C m2, weighting 200+EF kg/m2. In the first room a noise source is creating a sound pressure level Lp1 = 80+D dB at a frequency of 500 Hz. The second room has a volume V2 = 100+CD m3, and a reverberation tome T2 = 1+F/10 s. Compute the sound pressure level Lp2 in the second room.

* Lp2 = dB (5 points)

TOTAL of written questions POINTS:

## Oral Question

Topic: Points:

**Final score Points:**