# **­Applied Acoustics – 07 September 2018**

Name & Surname:

E

D

C

B

A

F

Matricula:

**Exercise 1 (tolerance +/- 1 dBA)**

Along a railway the traffic during daily period is 90+F trains. It is known that the SEL due to the transit of one train is 95+D dB(A) at 7.5m. Compute:

* SEL of one train at 30m dB(A) (3 points)
* Total daily SEL at 30m dB(A) (3 points)
* Leq,day at 30m dB(A) (4 points)

**Exercise 2 (tolerance +/- 1 dB)**

A sample of unknown absorption coefficient is placed at the end of a standing wave tube. At the opposite end, a loudspeaker generates a pure tone at 1000 Hz. Inside the pipe the following values are measured: Lp,min = 78+F/10 dB, Lp,max = 81+E/10 dB. Compute the following unknown quantities:

* Absorption coeff. of the sample  dB (4 points)
* SPLincident dB (3 points)
* SPLreflected dB (3 points)

**Exercise 3 (tolerance +/- 1 dB)**

A noise screen is required for reducing the noise generated by a sound source. The distance between source and receiver is 10+F m, and the screen is in the middle. The ground is absorbing, and the elevation above the ground of source, receiver and barrier are respectively 0.5m, 1.5m and 4+E/10 m. If the dominant frequency of the source is 500 Hz, compute:

* Fresnel number N (3 points)
* Noise reduction for a point source dB (3 points)
* Noise reduction for a line source dB (4 points)