**Applied Acoustics - 21/11/2014 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) During the passage of a vehicle, a value of Leq=70+F dB(A) is measured. The measurement time is 30+DE s. Compute the value of SEL.

*write number and measurement unit*

2) The SEL of a SUV running at 40+E km/h, measured at a distance of 7.5m, is equal to 80+F dB(A). Compute the maximum instantaneous sound pressure level at a receiver located at distance of 30+E m from the road.

*write number and measurement unit*

3) In the case of previous exercise, compute the Leq at the receiver when each hour 300+CD SUVs are passing.

*write number and measurement unit*

4) What is the SEL (at 7.5m distance) of the same SUV of previous two exercises if its speed is increased to 60+F km/h, in the hypothesis that its sound power level remains unchanged?

*write number and measurement unit*

5) On a railway the total traffic during the whole night is of 20+F passenger trains and of 10+E freight trains. Each passenger train is composed by 6 wagons, each of them with value of SEL (at 7.5m) = 88+D dB(A). Each freight train is composed by 20 wagons, each of them with value of SEL (at 7.5m) = 93+E dB(A). Both types of trains are pulled by a locomotive having a value of SEL = 98+D dB(A). Compute the value of Leq,night at a distance of 100+EF m.

*write number and measurement unit*

6) The noise inside a factory is dominated by a large pressing machine. Each action of the press causes an event with SEL=90+E dB(A). The background noise level inside the factory is 75+F/2 dB(A). Compute the value of Leq if there are 20+D pressing events each hour.

*write number and measurement unit*

7) Inside a factory, a worker stays 9+F/3 hours with an average value of Leq = 80+D dB(A). Compute his daily personal exposure level Lep.

*write number and measurement unit*

8) Inside a factory, a man stays at three workplaces: 3+F/10 h with an SPL=80+F/2 dB(A), 1+E/10 h with an SPL=85+E/4 dB(A) and 5+D/3 h with an SPL=78+C/4 dB(A). Compute his daily personal exposure level Lep.

*write number and measurement unit*

9) Considering a limit of Lep,max=83 dB(A), compute how much time (in min) it is allowed to stay inside a noisy room where the SPL is equal to 85+F/4 dB(A).

*write number and measurement unit*

10) In a cave miners are subjected to explosions, each of them has a SEL=100+E dB(A). How many explosions per day are allowed for each worker, if the personal exposure limit is Lep,max=87 dB(A)?

*write number and measurement unit*