UNIVERSITA' DEGLI STUDI ROMA TRE
CdS in ***Biomedical Engineering***

class of
Signal Processing for Biomedical Engineering

Written test of January 30th 2017. .

note: This test is valid only for registered students. Test delivery implies that previous results are canceled.

Family and first name (printed): _____ _____

signature: _____

Roma3 registration number: _____ or ID card number: _____

born on (day/month/year): _____ / _____ / _____

In the academic year 2016/2017 registered for the ___ year of the master course in

_____

e-mail (write in clear letters): _____ @ _____

Exercises:

1) Let x(n) be a sequence with its Fourier's spectrum X(ω), express the spectrum Y(ω) as a function of X(ω), where the sequence y(n) is defined as:

$$y(n) = x(2n) + x(2n-2)$$

2) Perform a digital linear FIR filter made of 5 coefficients to amplify (by the factor 4) the frequency components of input sequence below $\omega=\pi/4$, while the higher frequencies ($|\omega|>\pi/4$) of input signal are reduced by the factor 4.