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

**class of**
***Signal Processing for Biomedical Engineering***

**Written test of January 12th 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)=s(nT) be the sequence obtained from sampling with the period T of the analog signal s(t). Perform an **effective** digital signal processor with input sequence x(n) to obtain at its output the sequence: y(n) = s(0.6 n T – 0.2 T) .

2) Let r(n) be a digital signal received by a digital device, made of a useful signal s(n) with high-pass spectrum beyond $|\omega| > \pi/3$ and additive random white noise w(n), i.e. r(n)=s(n)+w(n). Perform a digital linear FIR filter made of 5 coefficients to extract the useful signal s(n) from the received signal r(n).