Ejercicio 4

4.a

$$H(s) = \frac{8}{(s+2)\cdot(s+4)} \tag{1}$$

$$H(z) = \frac{4\cdot\left(e^{-2T} - e^{-4T}\right)\cdot z}{z^2 - \left(e^{-2T} + e^{-4T}\right)\cdot z + e^{-6T}} \tag{2}$$

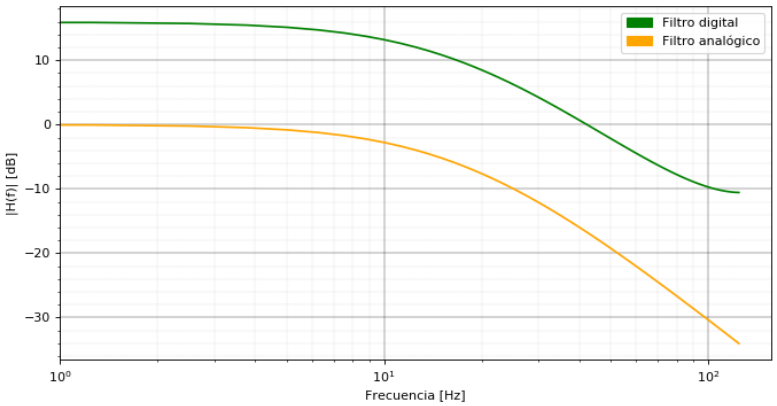

Figura 1: Método invariante al impulso (ejercicio 4.a)

4.b

$$H(s) = \frac{8}{s\cdot(s+2)\cdot(s+4)} \tag{3}$$

$$H(z) = \frac{z\cdot\left[\left(1 - 2e^{-2T} + e^{-4T}\right)\cdot z + e^{-6T} - 2e^{-4T} + e^{-2T}\right]}{z^3 - \left(1 + e^{-2T} + e^{-4T}\right)\cdot z^2 + \left(e^{-2T} + e^{-4T} + e^{-6T}\right)\cdot z - e^{-6T}} \tag{4}$$

4.c

$$H(s) = \frac{s+1}{(s+0.5)\cdot(s+4)} \tag{5}$$

$$H(z) = \frac{z\cdot\left[z - \frac{1}{7}\cdot\left(e^{-4T} + 6e^{-T/2}\right)\right]}{z^2 - \left(e^{-4T} + e^{-T/2}\right)\cdot z + e^{-9T/2}} \tag{6}$$

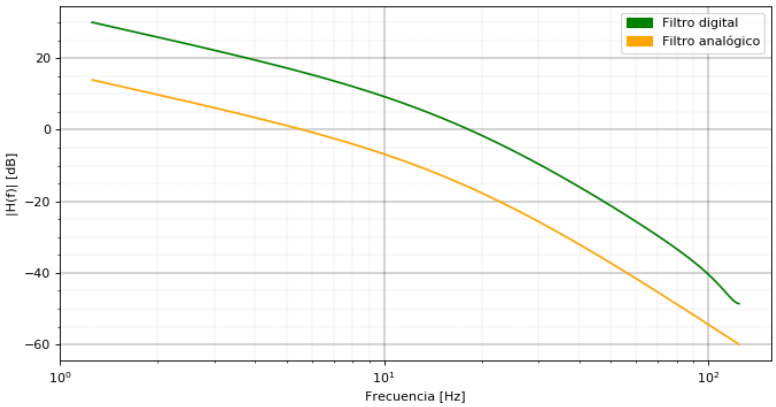

Figura 2: Método invariante al impulso (ejercicio 4.b)

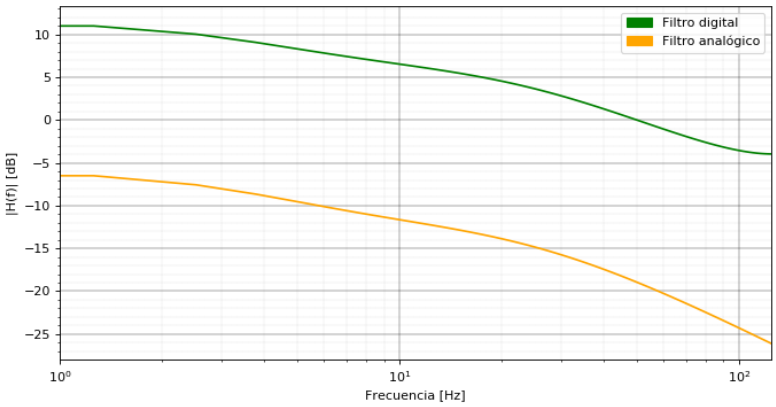

Figura 3: Método invariante al impulso (ejercicio 4.c)