4a. Prova

Aluno :

1. Determine a transformada $\mathcal{Z}$ da seqüência

$$x[n] = (-1)^n u[n] = \begin{cases} (-1)^n & \text{se } n \geq 0\,, \\ 0 & \text{se } n < 0\,. \end{cases}$$

2. Determine a transformada $\mathcal{Z}$ da seqüência

$$x[n] = -a^n u[-n-1] = \begin{cases} 0 & \text{se } n \geq 0\,, \\ -a^n & \text{se } n \leq -1\,. \end{cases}$$

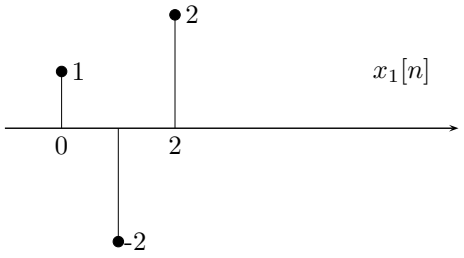
3. Determine a transformada $\mathcal{Z}$ da seqüência

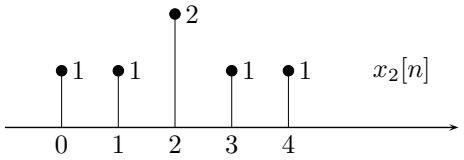
$$x[n] = a^n u[n] + b^n u[-n-1]\,.$$

4. Determine a transformada $\mathcal{Z}$ da seqüência finita

$$x[n] = \begin{cases} 1 & \text{se } 0 \leq n \leq N-1, \\ 0 & \text{caso contrário.} \end{cases}$$

5. Utilizando transformada $\mathcal{Z}$, calcule a convolução das seqüências finitas $x_1[n]$ e $x_2[n]$:

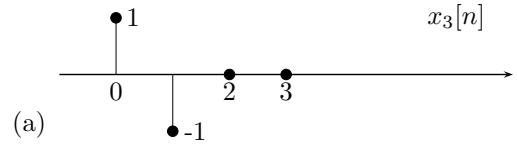




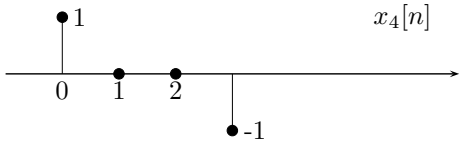
6. Determine a seqüência **causal** $x[n]$ cuja transformada $\mathcal{Z}$ é dada por

$$X(z) = \frac{1}{(1+z^{-1})(1-z^{-1})^2}\,.$$

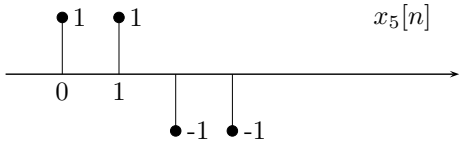
7. Calcule a Transformada Discreta de Fourier (DFT) das seguintes seqüências finitas (com $N = 4$):



(a)

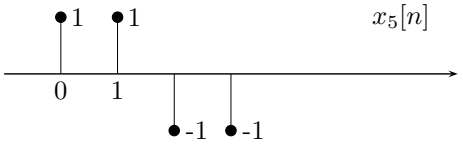


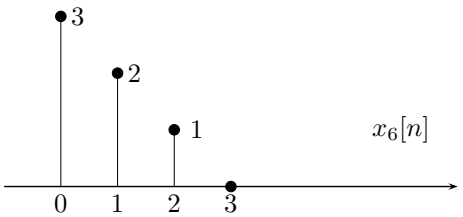
(b)



(c)

8. Calcule a **convolução circular** das seqüências finitas dadas abaixo ($N = 4$):





Questão	Peso	
1	1.0	
2	1.0	
3	1.0	
4	1.0	
5	1.0	
6	0.5	
7a	0.5	
7b	0.5	
7c	0.5	
8	1.0	
Total	8.0	