

guilherme5/engosc

Resolução Exercícios

Digitalização

$$1) \underset{\substack{\text{6 amostras} \\ \text{L canaliz}}}{44100} \cdot 2 = 88200 \text{ amostras/s}$$

$$88200 \cdot 2 \text{ bytes} = 176400 \text{ bytes/amostra}$$

$$\hookrightarrow \times 3600_s = 635040000 \text{ bytes}$$

$$\hookrightarrow \approx 605 \text{ MB}$$

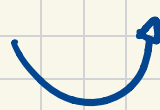
$$1) \text{ bits} = 300000 \cdot 14 = 4,2 \text{ milhões de bits}$$

$$V_{\text{az-Util}} = 1000 \cdot (1 - 0,1) = 900 \text{ bps}$$

$$\text{Tempo} = \frac{4,2 \text{ Mi}}{900} \approx 4666,6 \text{ segundos}$$

$$\frac{4666,6}{60} = 77,78 \text{ minutos}$$

$$2) \text{ Res} = \frac{\text{Range}}{2^n}$$

$$\frac{0,1}{2^n} \leq 10 \cdot 10^{-6}$$


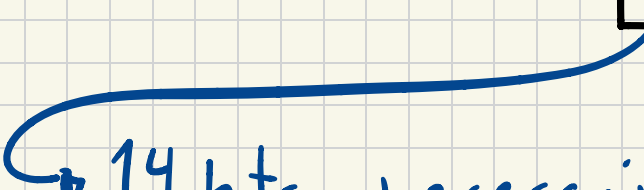
$$0,1 \leq 10 \cdot 10^{-6} \cdot 2^n$$

$$2^{13} = 8192$$

$$2^n \leq 10000$$

$$2^{14} = 16384$$

14 bits necessários



$$3) 4400 \text{ Hz}$$

$$T_S = 25 \mu\text{s} \rightarrow 25 \cdot 10^{-6}$$

$$f_{H_2} = \frac{1}{T_S} = \frac{1}{25 \cdot 10^{-6}} \quad H_2 = 40000 \text{ Hz}$$

$$f_1 = f_0 \cdot \frac{f_{\text{rep}}}{f_{\text{digit}}}$$

↓

$$f_{\text{reg outida}} = 4400 \frac{80000}{40000}$$

↳ 8800 Hz