

$$1) V_{med,0} = \frac{1}{T} \cdot \int_0^T F(t) \cdot 0,01 \quad F(t) = \frac{50 \text{ mV} \cdot t}{2 \cdot 56}$$

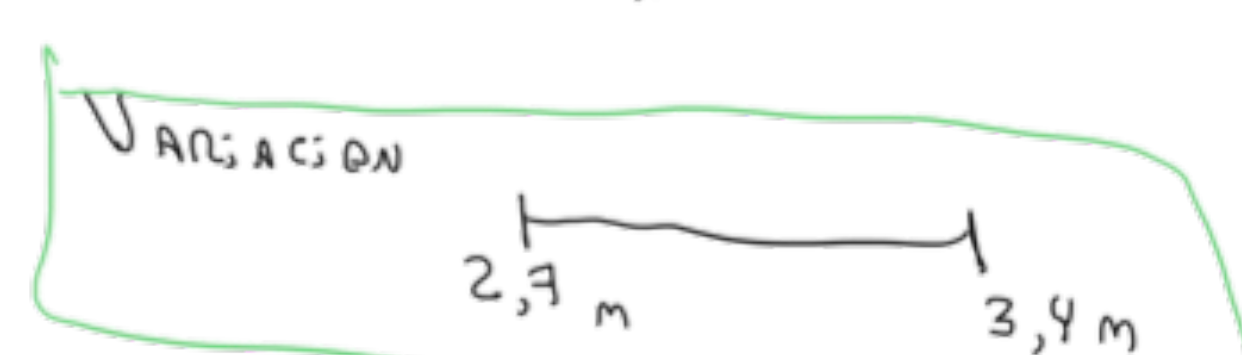
$$\int_0^T F(t) = \left[\frac{t^2}{2} - \frac{t^3}{3} \right] \cdot \frac{50 \text{ mV}}{2 \cdot 56}$$

$$V_{med,0} = \frac{25 \text{ mV}}{2 \cdot 56} \cdot 2 \cdot 56^2 = 25 \text{ mV}$$

$$3) \lambda = \frac{c}{f} \rightarrow \text{Frecuencia} \quad \lambda = 60 \cdot 6700 \text{ nm}$$

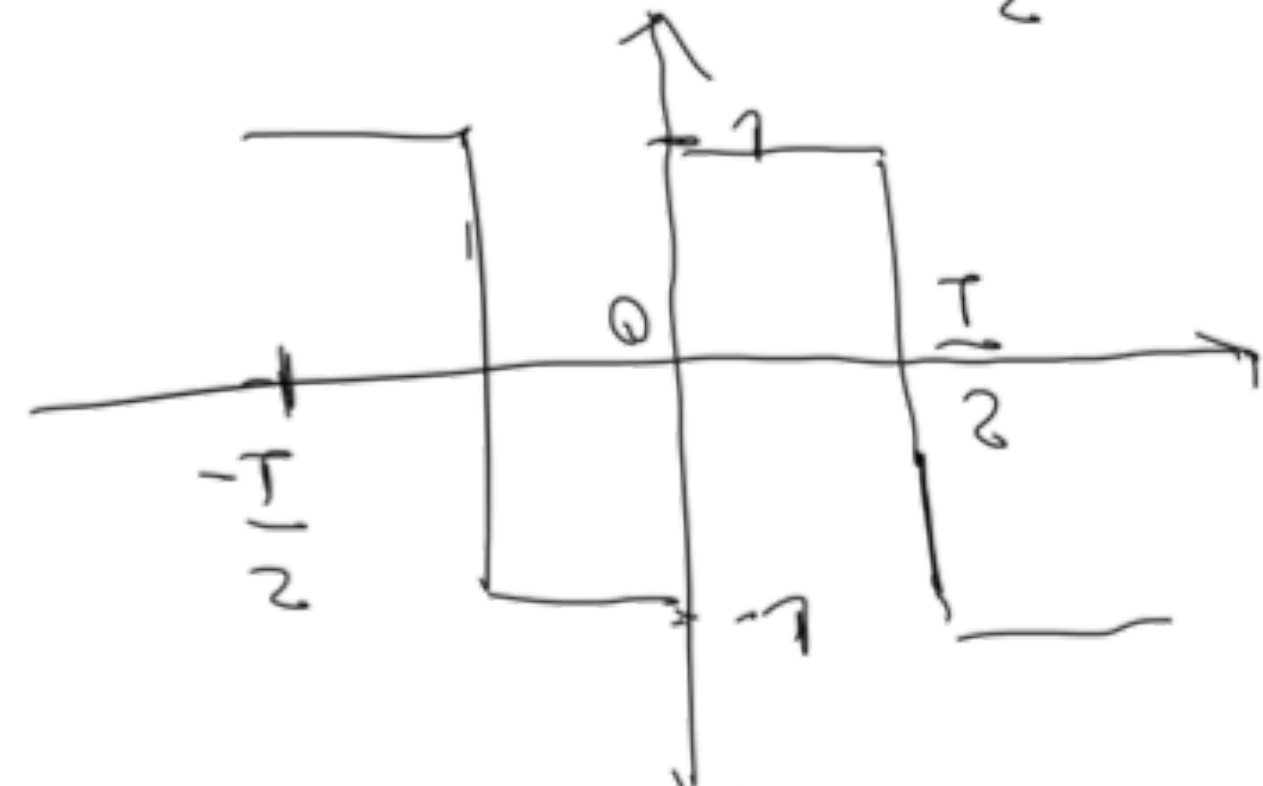
$$\lambda_{min} = \frac{3 \cdot 10^8 \text{ m/s}}{88 \cdot 10^6 \text{ Hz}} = 3,409 \text{ m}$$

$$\lambda_{max} = \frac{3 \cdot 10^8 \text{ m/s}}{108 \cdot 10^6 \text{ Hz}} = 2,778 \text{ m}$$



$$4) F(t) = 1 \quad 0 < t < \frac{T}{2}$$

$$F(t) = -1 \quad -\frac{T}{2} < t < 0$$



$$8) f_{RP} = 100 \text{ pps} \rightarrow T = 0,01 \text{ seg}$$

$$V_m = 2.000 \text{ Baudios} \rightarrow \frac{1}{2000} = 0,5 \cdot 10^{-3} \text{ seg}$$

$$A = 1 \text{ V}$$

$$N = \frac{T}{0} = \frac{0,01}{0,0005} = 20 \text{ ARMONICAS}$$

$$\text{ANCHO BANDA } \Delta f = 20 \cdot f_0 = 20 \times 100 \text{ Hz} = 2000 \text{ Hz}$$

$$\frac{AO}{T} = A_{max,med} = \frac{1 \times 0,0005}{0,01} = 0,05$$

$$9) f_{RP} = 300 \quad T = \frac{1}{300} = 0,0033$$

$$V_m = 2000 \text{ B} = \frac{1}{1200} = 0,00083$$

$$A = 1 \text{ V}$$

$$N = \frac{T}{0} = \frac{0,0033}{0,00083} = 3,96 \approx 4 \text{ ARMONICAS}$$

$$A_{max} = \frac{1 \times 0,00083}{0,0033} = 0,25$$

$$\Delta f = 4 \cdot f_0 = 4 \times 300 \text{ Hz} = 1200 \text{ Hz} \quad \text{ANCHO BANDA}$$

PRACTICA PARTE 2

$$5) V_m = 1200 \text{ B} = \frac{1}{1200} = 0,83 \cdot 10^{-3}$$

$$V_{FAM} = 4800 \text{ BPS}$$

$$\frac{4800}{1200} = \log_2 N \quad N = 16$$

TRANSMISION MULTINIVEL

$$\text{ANCHO PULSO} = \frac{1}{4800} = 0,20 \cdot 10^{-3}$$

$$8) \text{RENDIMIENTO SINCRONICA} = 100\%, \text{ NO HAY BITS PARA SINCRONIZAR}$$

$$R = \frac{8}{1+1+2+8} \times 100 = 66,6\%$$

$$TTT = 1024 \text{ BYTES} \times 8 \times \frac{1}{2400 \text{ bits}} = 3,41 \text{ segundos}$$

$$TTT = 1024 \times 12 \times \frac{1}{2400} = 5,12 \text{ seg}$$

$$\frac{3,41}{5,12} = 0,66 \text{ de mas lento}$$

$$9) \frac{1000}{4} \quad 0000 \quad 0000 \quad 0000 \quad 01$$

$$T_{OTM} = 18 \text{ BITS}$$

$$T = \frac{1}{2400} \quad \frac{V_T}{V_m} = \log_2 N$$

$$N = 16$$

$$\text{NO MULT: } T_{izmpo} = 18 \times 0,416 \times 10^{-3} = 7,5 \text{ mseg}$$

$$\text{CON MULT: } = 7,5 \text{ mseg} / 4 = 1,87 \text{ mseg}$$

CUADRO BITS

$$11) 1800 \text{ CARACTERES}$$

$$3600 \text{ B} = \frac{1}{3600}$$

$$R = 90\%,$$

$$1800 \times 8 = 14.400 \text{ BITS}$$

$$R = 0,9 = \frac{14.400}{\text{TOTAL BITS}} \quad T_{OTM} = 16.000$$

$$16.000 \times \frac{1}{3600} = 4,44 \text{ segs}$$