Prova 1 - Resolução

(1)(a)

$$\mu = \frac{A_{máx} - A_{min}}{A_{máx} + A_{min}} = \frac{6-2}{6+2} = \frac{4}{8} = 0,5$$

$$\boxed{\mu = 0,5}$$

(b) $\mu = \frac{A_m}{A_c}$

Para $A_c = 4$ (item (a))

$\mu = 0,5$

$$\mu = \frac{A_m}{A_c} = 0,5 = \frac{A_m}{4} \Rightarrow \boxed{A_m = 2}$$

Para $\mu = 0,2$,

$$\mu = \frac{A_m}{A_c} = 0,2 = \frac{2}{A_c} \Rightarrow \boxed{A_c = 10}$$

(2)

(a) Da equação, $\boxed{\mu = 0,1}$

(b) $A_c = 20$

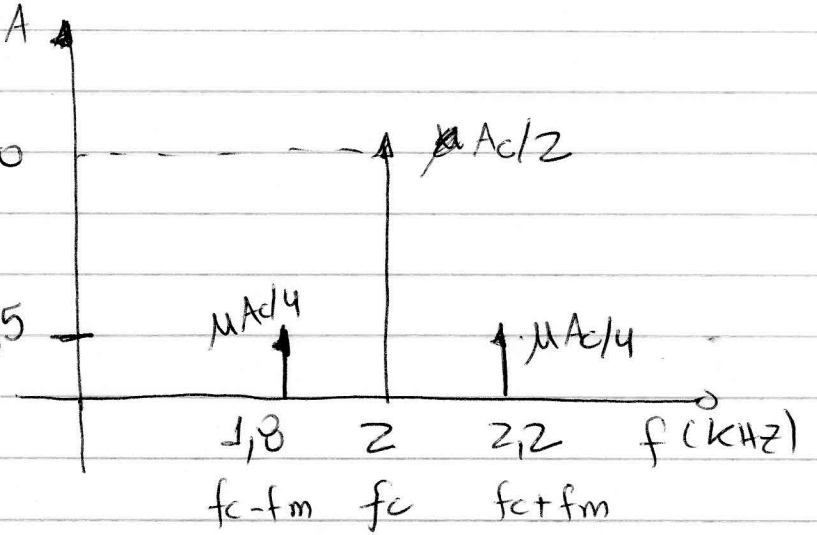
$f_c = 2.000\,Hz = 2\,kHz$

(c)

$$\mu = 0,1 = \frac{A_m}{20} \Rightarrow A_m = 2$$

$f_m = 200\,Hz$

(d)



(3)

$f_m = 5KHz$

$\Delta f = 10KHz$

Pela regra de Carson:

(a) $B \cong 2\Delta f + 2f_m = 2 \cdot 10 + 2 \cdot 5 = 30KHz$

(b) Índice de Modulação

$$\beta = \frac{\Delta f}{f_m} = \frac{10KHz}{5KHz} = 2$$

$$\boxed{\beta = 2}$$

4) (a) A frequência do osilador local deve ser:

$$F_{LO} = F_C + F_I$$

$$F_{LO} = 90\,MHz + 10{,}7\,MHz$$

$$\boxed{F_{LO} = 100{,}7\,MHz}$$

(b)

$$f_m = 10KHz$$

$$\beta = 5$$

$$\beta = \frac{\Delta f}{f_m} = 5 \Rightarrow \Delta f = \beta \cdot f_m$$

$$= 5 \cdot 10KHz$$

$$\Delta f = 50KHz$$

$$\Rightarrow B \cong 2\Delta f + 2f_m$$

$$\cong 2 \cdot 50KHz + 2 \cdot 10KHz$$

$$B \cong 120KHz$$

$$\boxed{B \cong 120KHz}$$