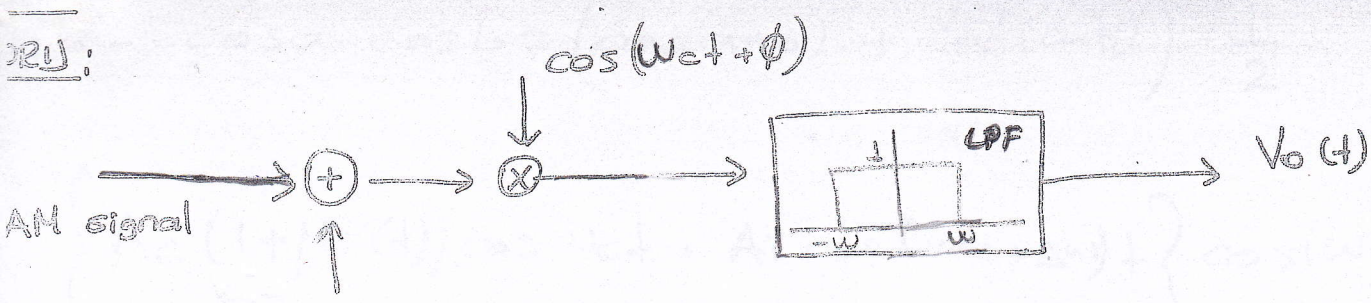
.01



$X_i(t) = A_i \cos(w_c t + \Delta w)t$

$\Delta w = 2\pi f_s$

In the demodulator shown above, there is an unwanted interfering carrier component $X_i(t)$ where $\Delta f < w$, and w is the maximum frequency of the message signal The local oscillator generates the carrier with a phase offset.

ϕ:

a-) Find an expression for $V_o(t)$

b) Find conditions on Δf and ϕ to recover the message without distortion. Explain

Cevap:

a-) AM:

$$A_c(1 + M x(t)) \cos w_c t$$

AM + $X_i(t)$:

$$A_c(1 + M x(t)) \cos w_c t + A_i \cos(w_c + \Delta w)t$$

$$(AM + X_i(t)) \cdot \cos(w_c t + \phi)$$

$$\{A_c(1 + M x(t)) \cos w_c t + A_i \cos(w_c + \Delta w)t\} \cos(w_c t + \phi)$$